

3 Megapixels

2048 x 1536
8x software zoom

30 Frames/s

VGA (640 x 480)
12 fps Mega

-22°F to +140°F

Weatherproof

-30°C to +60°C, IP65
no heating necessary

IEEE 802.3af

PoE

network power
even in winter

microphone & speaker

Audio

bi-directional via IP
variable frame rates

Video SIP Client

IP Telephony

alarm notify,
camera remote control

Video motion

multiple windows
precision pixel-based

lip-synchronized audio

Recording

event ring buffer
30 cams each 30 fps

Live viewing

30 cams at 30 fps
all on one screen

Backlight

safe using CMOS
without mechanical iris

Wall mount

with cable cover
for RJ45 wall outlet

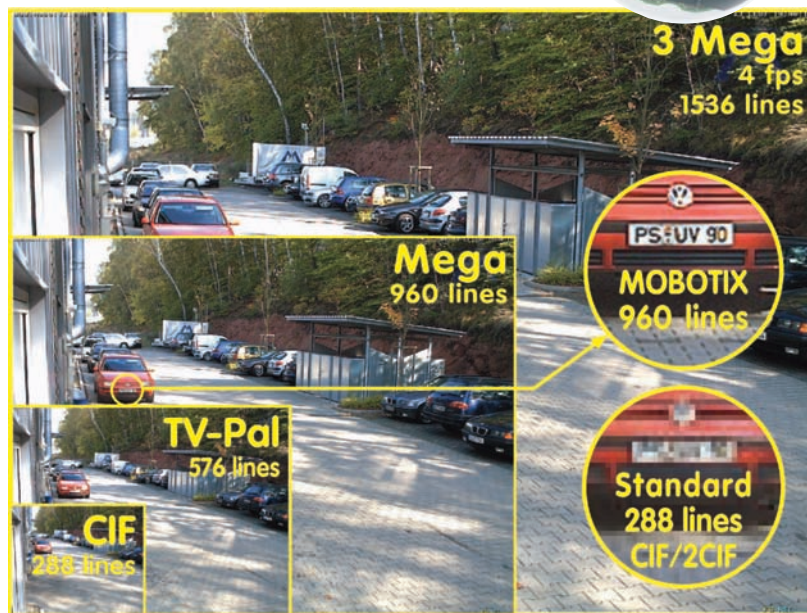
Robust

no moving parts
fiber glass housing

D22M

Camera Manual

Part 1



Complete integration for web and security

Current PDF File:
www.mobotix.com > Support > Manuals

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MOBOTIX ... the new face of IP video

D22M Camera Manual Part 1

MOBOTIX Camera Data

Enter the data of your camera here!

Camera Model:

Camera Name:

Factory IP Address:

 . . .

Current IP Address:

 . . .

DHCP:

activated ☐

deactivated ☐

Admin User Name:

Admin Password:



D22M Basic



D22M Secure



D22M with Vandalism Set

Note: MOBOTIX offers inexpensive seminars that include a workshop and practical exercises: **Basic Seminar** 3 days, **Advanced Seminar** 2 days. For more information, see www.mobotix.com

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Note

Chapters 4 and above are part of the **Camera Software Manual** (*Software Manual* in short). The main headings are listed below to give you an overview of the *Software Manual* contents.

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Note

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High resolution: QXGA
format with 2048x1536!

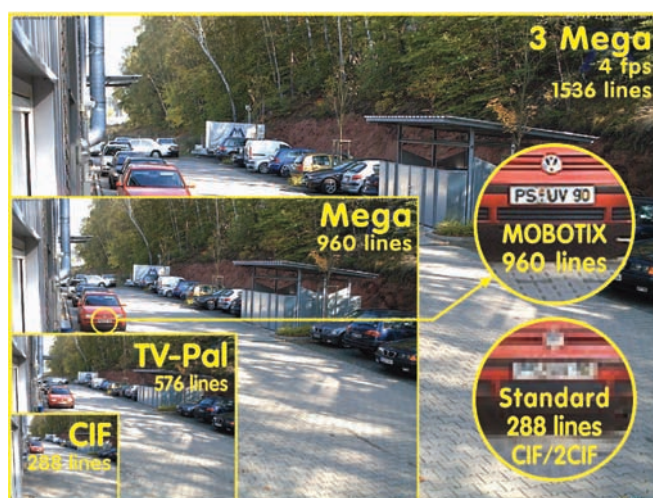
30 frames per second in
VGA format!

1 INTRODUCTION

The **D22M** cameras are powerful yet compact MOBOTIX network cameras that are capable of creating high-resolution live video streams (**QXGA format: 2048x1536 pixels**) with high image rates. When showing **VGA video (640x480)**, the camera can deliver up to **30 fps**. Even **Megapixel video (1280x960)** will still generate up to **10 fps**. The camera transmits lip-synchronous audio, both in the browser (ActiveX plug-in) and when using **MxControlCenter** (external speaker and microphone required; not available on D22M-Basic).

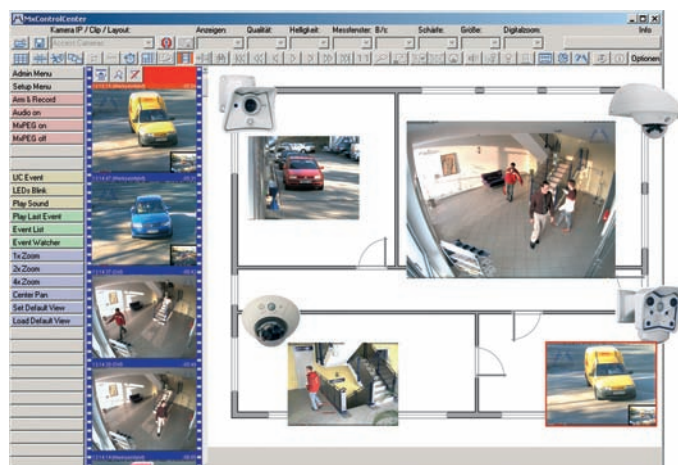


The MOBOTIX D22M is available as **SECURE, IT or Basic** model with different features (the Basic model does not have audio features). The D22M can be fitted with any of the five M14 high-performance lenses. Because of the low power consumption of only 3 Watts, the MOBOTIX D22M cameras feature the highest operating temperature range in the market



from **-30 to + 60°C (-22 to 140°F)**. Since MOBOTIX cameras neither fog up nor require heating, power can be supplied via the network cabling using standard PoE products. D22M IT and Secure models are absolutely dust-proof and resistant against water jets (**IP65**; D22M-Basic: IP54). When mounted to the **D22M Wall Mount**, the camera can be used in outdoor applications; the wall mount perfectly covers wall outlets, thus providing completely concealed cabling.

Like all other MOBOTIX cameras, the D22M models have more to offer than only the camera features. The integrated software features include a multitude of functions, such as **video motion detection, long-term recording, alarm messaging** and **video IP telephony** to name but a few features. Unlike in camera systems from other manufacturers, buying and installing additional software on the computer is thus unnecessary. Instead of using a web browser, you can also download the free **MxControlCenter** from the MOBOTIX website, which allows displaying multiple cameras on one monitor, allows for comfortably searching and



Everything integrated!

MxControlCenter

evaluating the alarm video clips and provides alerting features (including audio).

While **MxControlCenter** has been providing **virtual PTZ features** for quite a while, these features are now available **directly in the MOBOTIX camera**. This means that you can continuously zoom into or out of the live image using either the mouse wheel or a joystick. When storing images or video sequences, you can choose to store either the **visible image area** of the live image or the **full sensor image**. The second option would also allow examining the parts of an image or video after the event that had not been in the visible image section of the live image.



Virtual PTZ

Another problem known from photography are the distortions from wide-angle lenses. Straight lines at the image borders are bent inwards towards the corners. The integrated distortion correction features of the camera (and of MxControlCenter) allow **correcting** the bent lines of various lenses **using software algorithms**.



Image section with correction of wide-angle distortion

The current MOBOTIX cameras support direct storage on the **integrated Flash storage media, internal SD cards and external USB media**. The **MOBOTIX Secure R versions** are a highlight in this respect as they are delivered with an **integrated Flash storage device** (e.g. **R8** with 8 GB).



D22M-Secure models support SD cards and external USB devices. An internal Flash storage option is currently not available for D22M models.

D22M-Basic

The D22M-Basic, with a diameter of only 12.9 cm (5 in) and a height of only 8.5 cm (3.3 in) is the most compact and most discrete MOBOTIX camera. The camera is weatherproof (IP54) and thus suited for outdoor use.



Ø 129 mm/5.1 in

Note

Die **D22M-Basic** ist die richtige Wahl für Webcam-Anwendungen und einfache Überwachungsaufgaben.

D22M-IT and Secure
(IP65)

*Accessories required for
D22M: external micro-
phone and external
speaker

D22M-IT/Secure

The D22M IT and Secure models feature additional functions and security features. Among other things, you can connect an external speaker and microphone, store images and video sequences on an external file server (including audio) and call the camera using SIP video*. MOBOTIX also provides accessories for indoor and outdoor applications and vandalism-prone areas. The camera is weatherproof (IP65) and thus suited for outdoor use.



Ø 160 mm/6.3 in

**Note**

D22M IT and Secure models are the right choice for more sophisticated surveillance applications.

Accessories for the MOBOTIX D22M

- **On-Wall Set:** This set can reliably protect external cables if the cables cannot be guided from below the housing but have to be led above the wall for technical or legal reasons. In addition, the On-Wall mount provides ample space for extra modules (batteries, WiFi, ...).



Ø 165 mm x 37mm
/6.5 x 1.5 in



On-Wall Set (IP65)

- **Vandalism Set:** The Vandalism Set provides added protection for D22M cameras. The set consists of a robust camera ring made of stainless steel and a reinforced dome made from 3 mm thick polycarbonate. A camera with vandalism set is perfectly suited for applications in demanding environments (such as prisons, social hot-spots, train stations, etc.).



Vandalism Set (IP65)

The stainless steel camera ring is available in five versions:

- matt
- polished
- white powder-coated
- black powder-coated
- silver powder-coated

- **Stainless steel, matt**



- **Stainless steel, polished**



- **Stainless steel, white powder-coated**



- **Stainless steel, black powder-coated**



- **Stainless steel, silver powder-coated**



D22M Vandalism Set in different material and color versions

In-Ceiling Set

- **In-Ceiling Set:** The In-Ceiling Set allows mounting the D22M in fake ceilings, for example. This type of installation provides optimum protection for the camera and reduces the visible profile to a minimum since only the dome is visible.



Outdoor Wall Mount made from sturdy PBT 30GF

- **Wall Mount:** The Wall Mount is the ideal solution for mounting the D22M to walls for indoor and outdoor applications. The camera is absolutely dust-proof and resistant against water jets (IP65). The wall mount also covers RJ45 wall outlets and also has ample space for additional modules.



Pole Mount: Outdoor quality made of 3 mm stainless steel

- **Pole Mount:** If you would like to mount the MOBOTIX D22M to a pole, you should consider using the MOBOTIX Pole Mount, which is used in combination with the wall mount. The supplied stainless steel straps allow fixing the mount to poles with diameters between **60 and 180 mm (2.4 to 7.1 in)**.



- **Lenses, sensors:** You can choose between five different lenses for the MOBOTIX D22M (M14 thread). IT and Secure models can be ordered either with a daylight image sensor (**color**) or a night image sensor (**black and white**). For further information on this topic, please read section 1.4, *Lens Options, Hardware and Software Features*.

[illegible]

1.1 MOBOTIX Cost Benefits

1

Increased resolution reduces amount of cameras

1536-line, high-resolution sensors give a better overview and allow monitoring an entire room with just one camera from the corner

2

Reduced installation costs at any distance

Standard Ethernet connection enables the use of common network components such as fiber, copper and wireless (WiFi)

3

Intelligent recording technology reduces storage

Decentralized recording technology in the camera software puts less strain on PCs and reduces the amount of storage PCs (DVRs) by 10 times

4

Event-controlled image rate minimizes storage cost

Event-driven, automatically adjusted recording frame rate based on event or sensor action reduces amount of data and storage costs

5

No additional power and no heating required

Anti-fogging without heating allows usage of standard PoE technology to power the system via network and saves costs of power cabling

6

Backup power requirement reduced by 8 times

Low power consumption, 3 Watt, enables year-round (no heating required) PoE with one centralized UPS from installation room via network

7

Robust and practically maintenance free

Fiberglass-reinforced composite housing with built-in cable protection and no mechanical moving parts (no autoiris) guarantees longevity

8

No software and no licence costs

Control and recording software is integrated in the camera and is free of charge; new functions are available via free software downloads

9

Unlimited scalability and high return on investment

While in use, more cameras and storage can be added at any time; image format, frame rate & recording parameters can be camera specific

10

Additional functions and other extras included

Audio support, lens, wall mount and weatherproof housing (-30° to +60°C, -22° to +140°F) included; microphone & speaker available in certain models

1.2 MOBOTIX Technical Advantages

- 1 Progressive-scan instead of half-frame blur**
Megapixel sensor and image processing inside the camera with digital white balance generates sharp and true color images at every scale
- 2 Sun and backlight compensation**
CMOS sensor without auto iris, digital contrast enhancement and configurable exposure measurement zones guarantee optimum exposure control
- 3 Dual camera technology: 2-in-1**
Two possible camera views with picture-in-picture technology or 180° panoramic view; one Dual-Fixdome camera with 2.5 megapixel is enough
- 4 Long-term, high-performance Terabyte recording incl.**
Event detection and ring buffer recording by the camera itself allow recording of 40 smooth video streams on a single PC (1200 VGA images/s)
- 5 Simultaneous recording, event search and live viewing**
Live video for multiple users, recording and event search simultaneously possible in seconds from anywhere in the world via network
- 6 Very low network load**
Efficient MxPEG video codec, motion detection based recording and video buffering inside camera guarantee a very low network load
- 7 Bridging of recording during network failures**
Internal camera ring buffer bridges network failures and bandwidth fluctuations of wireless links (WLAN/UMTS) for several minutes
- 8 Day & night maintenance free**
Unique Day/Night camera technology without moving parts guarantees extreme light sensitivity and ensures long-term reliability
- 9 Audio and SIP telephony**
Lip-synchronized audio (live & recording); each camera is a video IP telephone based on SIP standard with automatic alarm call and remote control
- 10 MxControlCenter included**
Dual screen technology with building plans, free camera positioning, event search, image processing, lens distortion correction and PTZ support

1.3 MOBOTIX D22M Concept

High-resolution live video with up to 30 frames/s

The MOBOTIX cameras deliver smooth live video display in VGA format (640x480 pixels) with synchronous live audio, yet it keeps the network load to a minimum. Live video display now matches the performance of analog video systems. When recording, MOBOTIX systems easily outperform analog systems, since MOBOTIX cameras store the high live image resolution and frame rate without compromising image quality. MOBOTIX technology thus allows **simultaneously** recording the video from **30 cameras in continuous recording mode on one standard PC at 30 frames per second each, including the audio channel** of the cameras.

Low bandwidth requirements

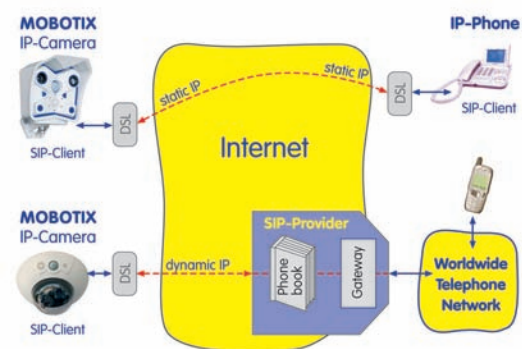
MOBOTIX' patent pending **MxPEG** streaming format allows fast live video with audio at extremely low network loads (1 to 2 Mbps). Since the MOBOTIX camera itself detects movements in the image (and not the computer), video is only transmitted if movements occur, and when the video and audio data are being stored.

Voice over IP (with accessories)

Moreover, **MxPEG** provides for lip-synchronized audio and two-way communication between the camera and your computer. Room surveillance with audio is possible using Internet Explorer or MxControlCenter. Alarm notification on your mobile via Internet (SIP) telephony is just as easy as event-controlled voice messages directly from the camera (ISDN requires M12 or D12 model).

IP telephony and video SIP (with accessories)

All telephone features can be used via Internet telephony thanks to the integrated SIP client. The SIP client allows remote-controlling the camera using the touchtone keys and also makes the alarm calls of the camera. Video telephony allows establishing SIP audio/video connections to the camera using Windows Messenger or similar applications (e.g. Counter-Path X-Lite/Eyebeam).



Long-term storage on file servers included

MOBOTIX cameras have an integrated long-term storage system for Linux, Windows and Mac OS X computers. Every camera manages its own ring buffer storage on the shared folder. Thanks to this decentralized approach, up to 30 live cameras can store images on one computer with **30 frames per second each, including audio**.

*Accessories required for D22M: external microphone and external speaker

D22M-IT and Secure models also allow connecting an external speaker and microphone; D22M cameras do not have an integrated speaker or a microphone



IP Telephony!

In order to use VoIP and Internet telephony with the D22M, you need an IT or Secure model with an attached external speaker and microphone

Recording on Flash, USB and SD storage media

The current MOBOTIX cameras support direct storage on the **integrated Flash storage media, internal SD cards and external USB media**.

	Int. Flash	SD Card	USB Device	Remarks for USB Devices
M12	X*	X**	X	Adapter cable required
D12	X*	X**	X	Adapter cable required
V12	X*			
M22M	X*		X	Device can be connected directly
D22M		X**	X	Adapter cable required
Q22M		X**		

The **MOBOTIX Secure R versions** are a highlight in this respect as they are delivered with an **integrated Flash storage device** (e.g. **R8** with 8 GB). These models have been preconfigured at the factory for Flash device storage. By using Flash, the camera features these additional possibilities:

- **Stand-alone use of the camera** without file server thanks to **recording on the Flash device**.
- **High-security application** with **recording on a file server or NAS/SAN** in which the Flash device serves as storage buffer. It can thus bridge longer failures of the network or the file server without losing any video sequences (supported in a future software version).
- **Event downloads** to USB media or SD cards for **evaluation of the recorded sequences** on a computer.

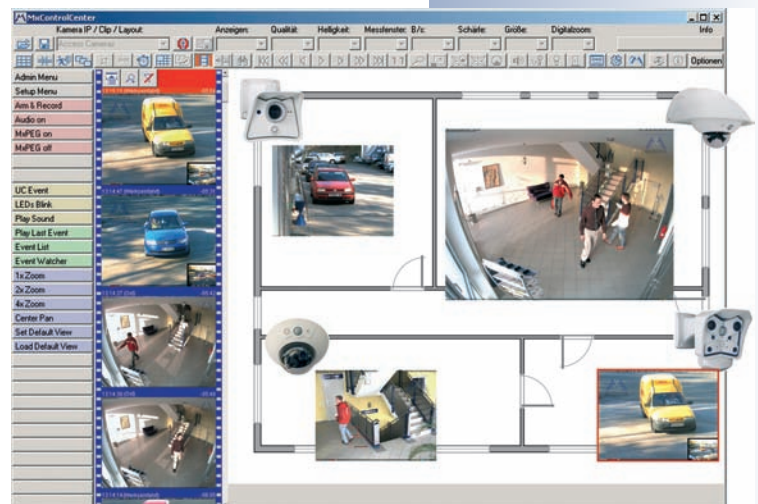
*Integrated Flash storage can only be installed at the factory!

**SD cards are supported from software version 3.4.2

*Accessories required for D22M: external microphone and external speaker

30 live cameras using MxControlCenter

Instead of using a web browser, you can also download the free **MxControlCenter** client from www.mobotix.com, which allows displaying up to 30 MOBOTIX cameras on one monitor (Linux and Mac OS X versions are currently being developed). In addition, **MxControlCenter** can process incoming alarms from the cameras and allows comfortably searching and evaluating the alarm video clips (including audio). The integrated Layout Editor of MxControlCenter provides for quickly creating floor plans by simply dragging/dropping the cameras onto a background image. Load a floor plan as background image, drag&drop the cameras; done.



Event and time-controlled

Just like event-controlled recording upon detecting movements in the image, the camera can also record when the volume detected by the microphone exceeds a set trigger value. Using scheduled recording, time tasks can start or stop video recording, uploading of images to a web site or sending of e-mails with video/audio clips. Special programs control vacation times and holidays.

Remote alerting

In case of an alarm, MOBOTIX cameras automatically pop up windows or activate other functions at a remote security control center. The cameras can use network/wireless, GSM/GPRS/UMTS (3G) or Internet connections for this purpose.

Day & Night

The Night versions of the MOBOTIX cameras with only one image sensor (Mono) deliver crisp and clear B/W images of moving objects even at night, MOBOTIX Day/Night models (M12D-DNight und D12D-DNight) with two image sensors (1x color, 1x B/W) deliver brilliant color images during the day and crisp B/W images at night. The cameras switch lenses automatically, depending on the level of illumination.

Integrated Power-over-Ethernet

Power is supplied as **Power-over Ethernet** via the network cabling **using the MOBOTIX power supply** (in combination with the Network Power Adapter), a MOBOTIX **Network Power Rack** (8 to 20 cameras), a **Network Power Box** (4 cameras), or by using a PoE-compatible switch (according to **PoE standard IEEE 802.3af**).



Since the camera's plastic housing insulates well and is anti-fogging, no additional heating or fans are necessary. This is why MOBOTIX, unlike other manufacturer's cameras, have low power requirements (3 Watts) and PoE can be used every day of the year indoors as well as outdoors for supplying power.

Weatherproof

MOBOTIX cameras are certified according to IP65 and are designed for outdoor as well as indoor usage*. As the cameras do not have any moving parts, they are extremely robust and resistant against heat and cold (-30°C to +60°C; -22°F to +140°F).

Logos, animated or freestyle

The logo generator of MOBOTIX cameras allows integrating banners and graphics (including files loaded from any URL) into the current camera images—with optional scheduler control. MOBOTIX cameras are the only network IP cameras supporting animated and transparent graphics.



No heating required—PoE is no problem even in the wintertime!

*D12 models together with Outdoor Wall Mount

Logo generator

[illegible]

2048 x 1536 pixels

*Telephony features can be used via VoIP (Internet telephony; all MOBOTIX cameras) or via ISDN (only M12 and D12 models)!

Logo generator

- **Live images** of up to 2048x1536 pixels resolution via network, ISDN, GSM, GPRS, UMTS, wireless with up to 30 fps (at VGA resolution 640x480), also adapted for **PDA**s.
- **Continuous digital zoom** (up to 8x zoom) and integrated panning (clicking with the mouse near the borders of the image will move the visible image area within the full image).
- **True software scaling** using the proven and continuously improved MOBOTIX algorithms, which delivers brilliant images even with smaller image formats (e.g. 320 x 240/CIF).
- **Audio video recording*** with three different recording modes: Event recording with audio, continuous recording with variable frame rate and audio as well as event-controlled snapshot recording of JPEG images.
- **Storage failure detection** can monitor a file server (or a Flash device) and can use one or more of the defined messaging options for error notification.
- **Playback** of recorded images/video sequences with audio in the integrated video management system.
- **Multiwatcher screen** can display and monitor several cameras via the Internet, with only one camera requiring access from the outside. This "proxy" camera uses only very little bandwidth, making it an ideal solution for low-bandwidth connections.
- **MultiView** screen for displaying multiple cameras or events in one browser window.
- **Event notification** by e-mail, SMS (using a provider), voice notification (Phone Call-Out), sounds and by visual means (e.g. red frame in live image) using two separate messaging paths.
- **Object tracing** for analyzing the paths of objects that are moving in the image.
- **Logo generator** for displaying logos in the camera images with dialogs for managing image files and defining image and logo profiles for controlling logo display.
- **Logos** can have **transparent areas** and can be displayed partially transparent at the same time (creating a watermark effect), banner rotation and animations are also possible.
- **Time Tables** for handling customized days, e.g. for holidays and vacations. The time tables are used to control the camera's arming, image recording, action, messaging, logo, obscure image and other features.

- **Remote signaling** for **master/slave** cameras, with the master camera controlling the arming status of the slave cameras. This allows arming, for example, of all slave cameras by using a key switch that is connected to the master camera.
- **Transfer profiles** for comfortably controlling transmissions via FTP, e-mail, phone calls and network messages.
- **Speaker phone*** with talk, listen and intercom modes via **Internet telephony (SIP) and ISDN** using the integrated microphone and speaker.
- **Phone Call-In*** to remotely control the camera using a touchtone phone via **Internet telephony (SIP) and ISDN** (retrieve camera information, establish Internet connection, announcement of retrieved IP address, intercom feature, etc.).
- **MxPEG video compression** using **MOBOTIX MxControlCenter**. The ActiveX plug-in for Internet Explorer users brings all advantages of MxPEG to the browser-based user interface (including the audio stream from and to the camera).
- **Routing** allows using other network connections besides the standard route.
- **DynDNS client** for accessing the camera via the Web using a symbolic name (e.g. mymobotixcam.dyndns.org) although the provider is assigning a new dynamic IP address every time the camera connects to the Internet.
- Inerasable **backup operating system** that is used to restart the camera in the event that a software update has failed, allowing you to restart the update process.
- **Enhanced startup options** for the camera (obtain IP address via **DHCP**, announcement of IP address and other network data, reset to factory default settings).
- **Notifications upon errors or when rebooting** provide a method for executing one or more notifications if the camera detects errors or when it reboots (e.g. blinking of the camera LEDs, audio message, FTP, e-mail, phone call, network message).
- **Extended security features** protect pages and features of the camera and prohibit unauthorized access (IP-level access control, intrusion detection) and also provide SSL-protected transmission of the video sequences and the data (using SSL encryption and X.509 certificates).

Software Updates

MOBOTIX provides **free** software updates at regular intervals that improve and expand the camera's functionality. Chapter 6, *Software Update*, in the *Software Manual* provides more information on the process.

*Telephony features can be used via VoIP (Internet telephony; all MOBOTIX cameras) or via ISDN (only M12 and D12 models)!

Free software updates on
www.mobotix.com

1.4 Lens Options, Hardware and Software Features

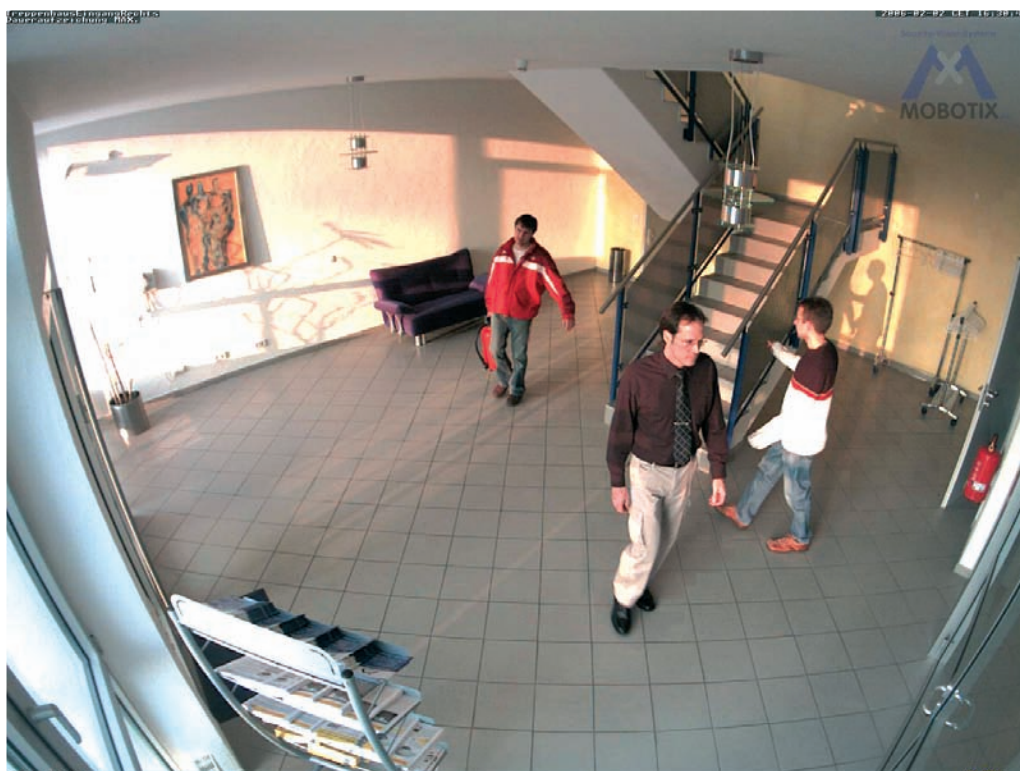
MOBOTIX currently offers five standard lenses with M14 thread from **Super Wide-Angle L22** with 22 mm focal length up to the **tele lens L135** with 135 mm focal length (equiv. to 35 mm camera). Since MOBOTIX cameras are backlight-proof, they do not require a mechanical auto iris. This makes all MOBOTIX lenses extremely robust and maintenance-free.

- **L22 Super Wide-Angle** 90° image angle (horizontally)
- **L32 Wide angle*** 60° image angle (horizontally)
- **L43 Wide angle** 45° image angle (horizontally)
- **L65 Tele*** 31° image angle (horizontally)
- **L135 Tele** 15° image angle (horizontally)

*L32 and L65 lenses are not available for M12 cameras





	L22 Super Wide Angle 90°	L32 Wide Angle*	L43 Wide Angle	L65 Tele*	L135 Tele
MOBOTIX Lenses					
	approx. 90°H x 67°V at 10 m appr.: 20.0 x 13.3 m	approx. 60°H x 45°V at 10 m appr.: 11.5 x 8.2 m	approx. 45°H x 34°V at 10 m appr.: 8.2 x 6.1 m	approx. 31°H x 23°V at 10 m appr.: 5.5 x 4.0 m	approx. 15°H x 11°V at 10 m appr.: 2.6 x 1.9 m

The **L22 Super Wide-Angle 90°** lens has very little distortion and excellent image quality, even when using the maximum digital zoom. If a camera with this lens has been mounted in the corner of a room, the complete room is visible on the image.



L22 Super Wide-Angle 90°

Lens Table

Order name	L22	L32*	L43	L65*	L135
Original image					
35 mm equivalent	22 mm	32 mm	43 mm	65 mm	135 mm
Focal length	4 mm	6 mm	8 mm	12 mm	25 mm
F-Number	2.0	2.0	2.0	2.0	2.5
Image angle horizontally	90°	60°	45°	31°	15°
Image angle vertically	67°	45°	34°	23°	11°
Distance 1 m	m	m	m	m	m
• Image width	2.0	1.1	0.8	0.5	0.3
• Image height	1.3	0.8	0.6	0.4	0.2
Distance 5 m	m	m	m	m	m
• Image width	10.0	5.7	4.1	2.7	1.3
• Image height	6.6	4.1	3.0	2.0	1.0
Distance 10 m	m	m	m	m	m
• Image width	20.0	11.5	8.2	5.5	2.6
• Image height	13.3	8.2	6.1	4.0	1.9
Distance 20 m	m	m	m	m	m
• Image width	40.0	23.0	16.4	11.0	5.2
• Image height	26.6	16.4	12.2	8.0	3.8
Distance 50 m	m	m	m	m	m
• Image width	100.0	57.5	41.0	27.5	13.0
• Image height	66.0	41.0	30.5	20.0	9.5

Note


The focal lengths of MOBOTIX lenses do not reflect the actual focal length of the lenses, but the focal length (Lxx mm) converted to 35 mm camera format. For example, the MOBOTIX Super Wide-Angle lens has an actual focal length of 4 mm. This would be the equivalent of 22 mm on a 35 mm camera. This lens is thus called L22.

Since the image sensors in digital cameras have different sizes, converting to 35 mm camera as a known format provides for better comparing the image formats and the fields of vision of the different lenses. Another benefit is that you can easily set a 35 mm camera (analog or digital) to the same focal length (Lxx) to obtain the same field of vision. This approach greatly facilitates lens selection.

*L32 and L65 lenses are not available for M12 cameras

Focal lengths of MOBOTIX lenses are always given as compared to a 35 mm camera

To determine the lens you need, simply use a camera with zoom lens to find a matching MOBOTIX lens

	D22M-Basic MX-D22Mi-Basic-D22	D22M-IT MX-D22Mi-IT-D22	D22M-Sec MX-D22M-Sec-D22	D22M-Sec-Night MX-D22M-Sec-Night-N22
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Hardware Features D22M

Outdoor weatherpr. (IP54/IP65*)	IP54	IP65	IP65	IP65
Ethernet, ISDN, USB, RS232	E / - / - / -	E / - / U [†] / -	E / - / U [†] / -	E / - / U [†] / -
SD card	-	1	1	1
Microphone/Speaker	-/-	-/-	-/-	-/-
Mono (M)/Dual (D)	M	M	M	M-Night
Image Sensor	Color	Color	Color	BW
Lens	L22	L22	L22	L22
Image Size	VGA	VGA	3 Mega	MEGA
Resolution horizontal x vertical	640x480	640x480	2048x1536	1280x960
Max. frame rate CIF/VGA/Mega	16/16/-	30/30/-	30/30/12	30/30/12
Sensitivity at 1/60 second (Lux)	1	1	1	0.1
Sensitivity at 1 second (Lux)	0.05	0.05	0.05	0.005
Automatic night lens switch	-	-	-	-
Storage (MB)	64	64	128	128
Additional internal Flash storage	-	-	-	-
Video ring buffer (MB)	2	32	64	64
CIF images approx.	100	2,000	4,000	4,000
VGA images approx.	50	1,250	2,500	2,500
Mega images approx.	-	-	800	800
External audio (Line-In/Out)	-	X*	X*	X*
Signal input pins	-	-	-	-
Signal output pins	-	-	-	-
Concealed cabling	X	X	X	X
In stock	X	X	X	X

[†]Requires special adapter cable for USB

*L32 and L65 lenses are not available for M12 cameras

L22 Super Wide Angle 90°	L32 Wide Angle*	L43 Wide Angle	L65 Tele*	L135 Tele
				
approx. 90°H x 67°V at 10 m appr.: 20.0 x 13.3 m	approx. 60°H x 45°V at 10 m appr.: 11.5 x 8.2 m	approx. 45°H x 34°V at 10 m appr.: 8.2 x 6.1 m	approx. 31°H x 23°V at 10 m appr.: 5.5 x 4.0 m	approx. 15°H x 11°V at 10 m appr.: 2.6 x 1.9 m

		Basic Models	Web Models	IT Models	Secure Models
Software Features (All Models)					
Digital zoom (up to 8x, continuous) with panning	-	X	X	X	X
Motion JPEG/MxPEG video streaming	X/X	X/X	X/X	X/X	X/X
Custom exposure windows	X	X	X	X	X
Video Motion detection	X	X	X	X	X
Time and event control (FTP, email, logos)	X	X	X	X	X
Custom time tables/holidays	-	X	X	X	X
Web functionality (FTP, email)	X	X	X	X	X
Quad/MultiView in browser	X	X	X	X	X
Recording/Playback in browser	X	X	X	X	X
Logo generator, animated	-	X	X	X	X
Single image recording (pre-/post-alarm images)	3	3	10	50	
Terabyte ring buffer (Win/Lin/Mac) via network	-	-	X	X	
Continuous video/audio recording, 0.2 to 30 fps	-	-	X	X	
Video/audio recording (event-triggered)	-	-	X	X	
Event-controlled frame rate with continuous audio	-	-	X	X	
Flexible event logic	-	-	-	X	
Master/Slave arming by one camera	-	-	-	X	
Scheduled privacy zones, several areas	-	-	-	X	
Bidirectional audio (IP) from/to browser	-	-	X*	X*	
Customized voice messages	-	-	X	X	
VoIP telephony (Audio/Video, SIP)	-	-	X*	X*	
Alarm calls to softphones (SIP) e.g. X-Lite	-	-	X	X	
Remote alarm notification (via TCP/IP, IP Notify)	-	-	X	X	
RS232 Data Logger/Terminal	-	-	X**	X**	
Programming interface/HTTP API	-	-	X	X	
Security features (HTTPS/SSL, IP-level access control, network authentication IEEE 802.1X)	X	X	X	X	
Model Feature List					
Image size	VGA	3 Mega**	VGA	3 Mega**	
Image Sensor	Color	Color	Color/BW	Color/BW	
Standard lens for software version	L22*	L22*	L22*	L22*	
Audio support (Microphone/Speaker)	-/S*	-/S*	M/S*	M/S*	

The Web version is available only as M12 model

The Basic version is available only as D22M and Q22M model

The IT version is not available as Q22M model

*D22M IT and Secure models allow connecting an external speaker and microphone. D22M cameras do not have a microphone or speaker.



**3 MEGA resolution with 2048x1536 pixels; the B/W image sensors of the Sec-DNight versions have Mega resolution (1280x960 pixels)

**M22M models require the CamIO; not available for D22M models

*M12 models are delivered with the lenses specified by the customer

1.5 Important Notes

1.5.1 Weatherproofness

The MOBOTIX D22M IT and Secure models reach **protection class IP65** (absolutely dustproof, resistant against water jets) and are an excellent choice for outdoor applications when used with the **D22M Outdoor wall mount**. The Basic model of the MOBOTIX D22M reaches protection class IP54.

1.5.2 Password for the Administration Menu

Accessing the administration area of the camera (**Admin Menu** button) is only possible after entering a user name and password:

- Factory default user: **admin**
- Factory default password: **meinsm**

The **Quick Installation** wizard will appear automatically when accessing the Administration Menu for the first time. It provides an easy method to adjust the basic camera settings to the current application scenario. **For security reasons, it is highly recommended to change the default administrator password after the camera has been configured properly.**

Enter the user name and password exactly as shown above. Note that all entries are case-sensitive.

CAUTION: Make sure that you store information on user names and passwords in a secure place. If you lose the administrator password and cannot access the Administration menu, the password can only be reset at the factory. This service is subject to a service charge!

1.5.3 Irreversibly Deactivating the Microphone

Deactivating a camera's microphone may become necessary in order to protect the privacy of people at a workplace or for other reasons. You can permanently and **irreversibly** deactivate the microphone in the **Admin Menu > Loudspeaker and Microphone** dialog.

CAUTION: This deactivation is permanent and cannot be reversed even by MOBOTIX engineers. Deactivating the microphone will also deactivate all features that use the camera's microphone.

The microphone can be irreversibly deactivated!

1.5.4 Starting the Camera Using the Factory IP Address

If the camera's IP address is not known, you can start the camera with its factory IP address. Section 3.6, *Starting the Camera Using the Factory IP Address*, describes this procedure in more detail.

1.5.5 Resetting the Camera to Factory Defaults

All settings of the MOBOTIX camera can be reset permanently to the factory default settings. This makes sense if you have, for example, obtained a camera without any information or you would like to reset all settings after testing the camera. In order to perform this procedure, you need to have access to the administration area of the camera (**admins** group). Open **Admin Menu > Reset ...** to reset the camera to factory defaults.

Note: All defined users will be deleted and the admin password will be reset to the factory default when you reset the camera using **Admin Menu > Reset ...**. Proceed according to section 3.6, *Starting the Camera Using the Factory IP Address*, if you would like to maintain existing users.

1.5.6 Activating Event Control for Security Applications

In its default configuration, the camera's **event control and video motion detection features** are **not enabled**. In order to activate event control as a whole, open **Setup Menu > General Event Settings** and activate the **Arming** switch. Click on the **Arm & Record** softbutton of the user interface in the browser to enable the standard event features. The camera now displays the video motion detection window in the live image (dotted frame in the center) and the camera automatically stores images as soon as the video motion window detects movements.

1.5.7 Deactivating Text and Logo Options

As the camera arming is deactivated in its default configuration (see preceding section), the MOBOTIX camera only displays the Text **WWW.MOBOTIX.COM**, the time stamp and the MOBOTIX logo at the top of the image. Once the camera arming has been activated (see above), the text at the bottom of the live image (event, action and messaging symbols) will also appear.

You can deactivate the status text at the bottom and the text at the top left corner of the live image by setting **Text Display** in the **Setup Menu > Text & Display Settings** dialog to *Off*. Setting **Text Display** to *Date & Time* will only display the time stamp in the live image.

In order to hide the logo in the live image, open **Admin Menu > Logo Profiles** and set **Logo Display** to *Disable*.

You can reset specific parts of the configuration

If the dotted frame is visible in the live image of the camera, the camera is armed

Text and logos can be also deactivated or customized to your liking

Deactivating the camera
reboot

1.5.8 Deactivating the Automatic Daily Reboot of the Camera

In its default configuration, the MOBOTIX camera automatically reboots every morning at 3:36 am. The reason for this is that external influences (e.g. radiation in high locations) can lead to camera malfunctions. The automatic reboot will refresh the camera's memory and will ensure proper operation without requiring any interaction on the part of the user. If desired, you can deactivate or delete the automatic reboot of the camera in the **Admin Menu > Time Tasks** dialog.

1.5.9 ISDN Compatibility Notes

MOBOTIX M12, D12 and V12 cameras are compatible with **Euro ISDN standard TBR3/TBR3 A1**. MOBOTIX offers special models for the Japanese market that support the Japanese ISDN standard. For additional information on this topic, see the Japanese section at www.mobotix.com. MOBOTIX M22M-, D22M and Q22M models do not possess ISDN functionality.

1.5.10 Using Internet Browsers

Current Internet browsers (Internet Explorer, Netscape, Mozilla, Firefox, Safari, Konqueror, Opera, ...) with enabled **JavaScript** can show the camera's live images with their standard settings.

Section 3.4.5, *Browser Settings*, contains information on possible browser problems.

1.5.11 Cleaning Instructions

If a lens is dirty (e.g. from the installation process), you can clean the lens(es) using a lint-free cotton cloth.


1.5.12 Safety Warnings

Electrical surges can be induced by other electrical appliances, improper wiring, but also from the outside (e.g. lightning strikes to phone or power lines).


MOBOTIX cameras are protected against the effects of small electrical surges by numerous measures. These measures, however, cannot prevent the camera from being damaged when stronger electrical surges occur. Special care should be taken when installing the camera outside of buildings to ensure proper protection against lightning, since this also protects the building and the whole network infrastructure.


MOBOTIX recommends having MOBOTIX cameras installed only by specialists accustomed to installing network devices and having proper respect for the pertinent regulations regarding lightning protection and fire prevention as well as the current technology for preventing damages from electrical surges. For more information on wiring and potential dangers, see the section *Wiring, Fire Prevention, Lightning and Surge Protection* at the end of chapter 2.

1.5.13 Additional Information

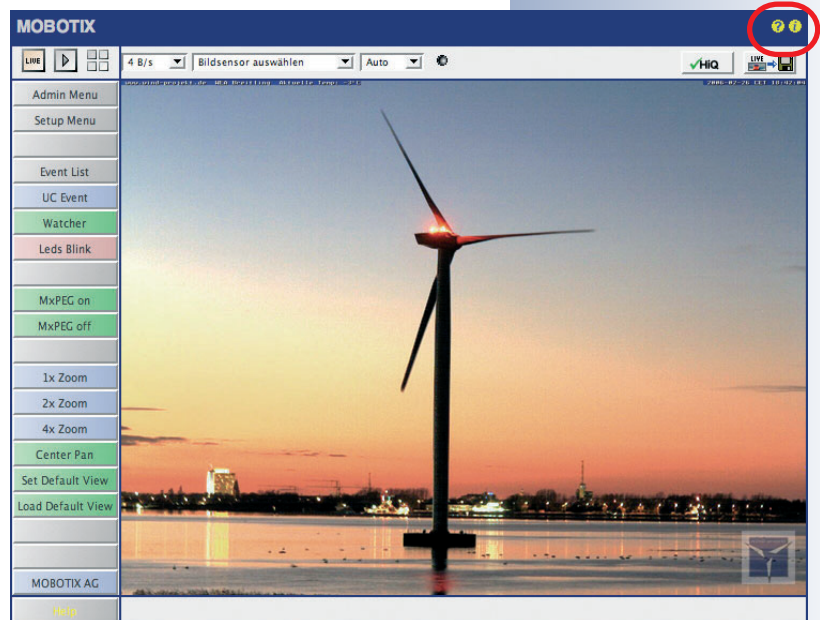
For more information on this topic, see the **News** and **Functional Overview** pages in the **online help** of the camera's browser interface. Click on the yellow  icon in the top right corner to open the camera's online help.

 Camera Help

 Camera Status

To get complete information on the camera status and its current configuration, open the **Camera Status** dialog. Click on the yellow  icon in the top right corner to open the corresponding camera dialog.

Another source of information on all dialogs and parameters of the MOBOTIX camera is the **Reference Manual** (PDF), which consists of the camera's online help. You can download the PDF file from the MOBOTIX website in the **Support > Manuals** section. This section also contains the latest version of the *Software Manual Part 2*.



2 MOUNTING THE CAMERA

2.1 Preparing the Installation

Before mounting the MOBOTIX D22M, the following questions should be solved:

- 1) **Where will the camera be mounted?**
Mounting the camera to a ceiling or wall, *section 2.1.1*
- 2) **Which other mounting options are available?**
On-wall mounting, vandalism protection, wall mounting with Wall Mount, pole mounting with Pole Mount, in-ceiling mounting, *section 2.1.2*
- 3) **How is the camera connected to the network and how is the power supplied?**
Network Power Adapter, Netpower Rack/ Netpower Box, MxPoE or PoE-compatible switch (IEEE 802.3af), *section 2.1.3*.
- 4) **How are the connections furnished from the building?**
Wall outlets, *section 2.1.4*
- 5) **Which sections of the Mounting Instructions should I read?**
In order to mount the D22M with its optional accessories as quickly and efficiently as possible, you should consult the **Directions for Mounting**, *section 2.1.5*.

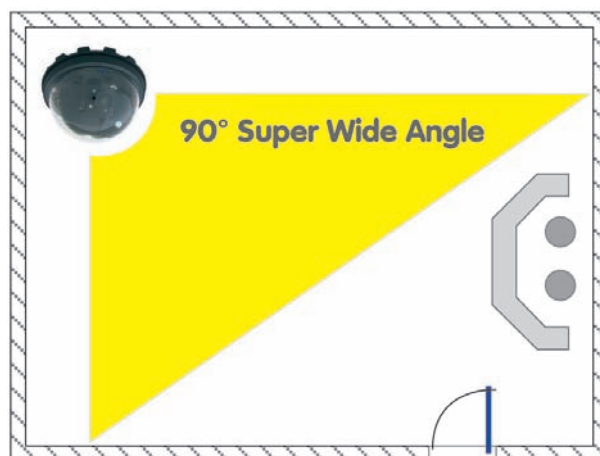
The following sections contain a brief overview for all of these questions as well as references to the relevant sections in this manual, which contain more detailed information. For more information on the MOBOTIX D22M and the available accessories, please also refer to shop.mobotix.com.

2.1.1 Mounting to a Ceiling or Wall

The MOBOTIX D22M has been designed to be mounted to either ceilings or to a wall, when using the Wall Mount. The supplied L22 90° lens then allows monitoring almost the entire room from the walls to the ceiling.

It is also possible to mount the D22M directly to a wall (without using the Wall Mount), but doing so will result in reduced flexibility for positioning the lens. We hence recommend using the Wall Mount if you intend to mount the camera to a wall.

The cable entry of the D22M is below the center of the camera's housing. For more detailed information on mounting the camera, see sections 2.5 and above; the drilling templates are at the end of the manual.



Surveillance of a complete room with only one camera

2.1.2 Additional Mounting Options for IT/Secure Models

On-Wall Mounting (D22M-OPT-AP)

The On-Wall set can reliably protect external cables if the cables cannot be guided from below the housing but have to be led above the wall. In addition, the On-Wall mount provides ample space for extra modules.



Q22M/D22M On-Wall Set (IP65, also for Outdoor applications)

In-Ceiling Mounting (D22M-OPT-TC)

The In-Ceiling Set allows mounting the camera in fake ceilings, for example. This type of installation provides optimum protection for the camera and reduces the visible profile to a minimum since only the dome is visible.



Q22M/D22M In-Ceiling Set

Vandalism Protection (D22M-OPT-VANDAL-...)

The Vandalism Set provides added protection for the cameras. The set consists of a robust camera ring made from stainless steel and a reinforced dome made from 3 mm thick polycarbonate. A camera equipped with the Vandalism Set is perfectly suited for applications in demanding environments (such as prisons, social hot-spots, train stations, etc.).



D22M Vandalism set consists of stainless steel ring (IP65, available polished, matt or powder-coated)

Mounting to a Wall Using the Wall Mount (D22M-OPT-WH)

The Wall Mount is the ideal solution for mounting the camera to walls for indoor and outdoor applications. The camera is absolutely dustproof and resistant against water jets (IP65). The wall mount also covers RJ45 wall outlets and also has ample space for additional modules.



Q22M/D22M Wall Mount made from sturdy PBT 306F (IP65)

Mounting to Poles Using the Pole Mount (D22M-OPT-MH)

If you would like to mount the camera to a pole, you should consider using the MOBOTIX Pole Mount. This mount can only be used in conjunction with the wall mount. The supplied stainless steel straps allow fixing the mount to poles with diameters between 60 and 180 mm (2.4 to 7.1 in).



Q22M/D22M Pole Mount: Outdoor quality made of 3 mm stainless steel (in conjunction with Outdoor Wall Mount)

2.1.3 Network Connection and Power Supply, UPS

Power-over-Ethernet (MxPoE)

Power is supplied to all D22M models via the network cabling (**MxPoE**, **Power-over-Ethernet**). For smaller installations, the universal **power supply** (MX-SNT-E/U/GB/J/AUS01-30-RJ) with the MOBOTIX **Network Power Adapter** MX-NPA-3-RJ is sufficient. Larger installations would benefit from one or more MOBOTIX **Network Power Racks/Boxes** that are available for supplying power to 4, 8 or 20 cameras (MX-NPR-4, -8 or -20).

See section 2.10, *Camera Accessories*, for more information on these and other items or open shop.mobotix.com (**Products > Accessories** section).

MX-NPA-3-RJ: Easy installation for smaller systems

MX-NPR-4: For mounting in wiring cupboards; includes DIN rail clip

MX-NPR-8/20: 19" rack mount (2 rack units)



Network Power Adapter
MX-NPA-3-RJ



Netpower Box
MX-NPR-4



Netpower Rack
MX-NPR-20

Advantages of MOBOTIX PoE Products

- Zero maintenance and reliable without fans.
- Higher reliability of the system as a whole, since standard switches without PoE can be used (lower risk of failure).
- Easy installation on DIN rails using supplied adapter (**MX-NPR-4**) or in 19" racks (**MX-NPR-8/20**).

Power-over-Ethernet (PoE according to IEEE 802.3af)

Besides **MOBOTIX MxPoE**, the MOBOTIX D22M also supports the **Power-over-Ethernet standard IEEE 802.3af**. You can hence use switches or routers that support the PoE (Power-over-Ethernet) standard IEEE 802.3af.

Sections 3.3 ff contain more information on the possible combinations of connecting the D22M and power supply options.

Note

If you are using **Power-over-Ethernet (IEEE 802.3af) network components** for supplying power to the MOBOTIX D22M, make sure that these components do not have a fan. Since the power consumption of MOBOTIX cameras is very low compared to other products, the reliability of the entire system is increased and the life cycle of the PoE components is expanded.

The D22M supports the MOBOTIX PoE products for power injection into the network cabling (MxPoE) and the Power-over-Ethernet standard IEEE 802.3af (PoE)

PoE components without fans increase overall reliability of the entire system

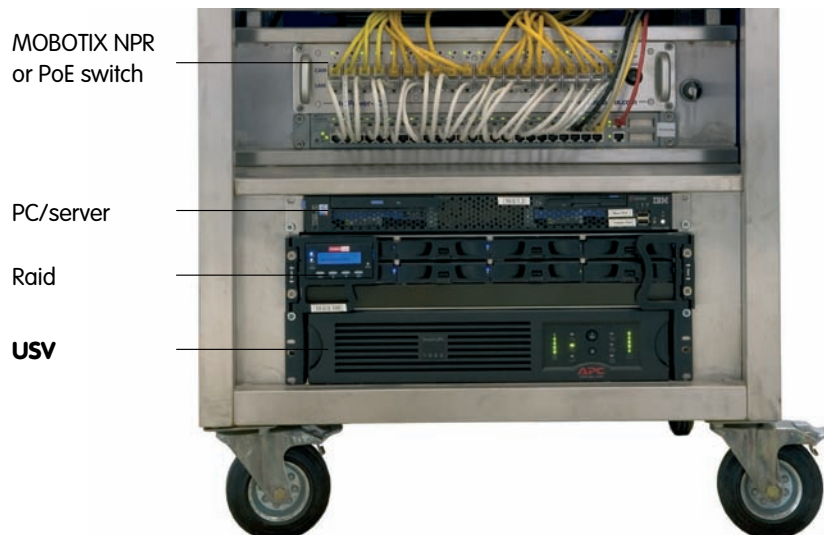
Using Uninterruptible Power Supplies (UPS)

In order to maintain a continuous power supply even when utility power fails, you should install an **uninterruptible power supply (UPS)**. These devices also provide full protection against electrical surges and voltage fluctuations and thus enhance the reliability of the system as a whole.

When using a more powerful 19" rack-mounted USP, you can also protect all other network components (e.g. switches, routers, PoE switches, etc.).

Since MOBOTIX cameras do not require any heating even in the wintertime, the power consumption of 3 W is very low. This in turn means that you can centralize the USP-protected power supply by injecting power into the network cables (max. 100 m/300 ft). This kind of protected power supply can be used either with MOBOTIX MxPoE products (MX-NPA-3-RJ + external power supply or MX-NPR-4/8/20) or with PoE-compliant switches according to IEEE 802.3af.

UPS not only protect the camera against power failures, they also protect all other connected network devices against damage from voltage peaks and lows



Typical setup of a 19" system with UPS

2.1.4 Providing the Camera Connections, Wall Outlets

Once the camera position, the position of the cable outlets, and the method of power supply have been decided upon, the cabling should be installed. Before mounting the MOBOTIX D22M, you should make sure that the network connections have been properly tested, so that the proper functioning of the camera is guaranteed.

Please make sure that you follow the notes in section 2.10.2, *Wiring, Fire Prevention, Lightning and Surge Protection*.








If you would like to use an external audio connection, you will have to install an additional **MOBOTIX D22M audio cable** into the camera's housing. Please send an email to intl-support@mobotix.com to get more information on this topic.

2.1.5 Directions for Mounting

Once the type of installation, the camera connections and the method of power supply have been decided upon, you should follow the directions listed below. This will ensure that you will only have to read the relevant sections of this chapter, which will speed up mounting the D22M.

Mounting to ceilings for D22M IT, Secure and Basic models (without additional mounting options)

Additional mounting options for D22M IT and Secure models, not available for D22M Basic

Directions for Mounting	
Preparatory Tasks	Sections
All camera versions	2.1 <i>Preparing the Installation</i>
Camera Version	Sections
D22M-IT/Secure 	2.2 <i>Delivered Parts, Components and Dimensions</i>
D22M-Basic 	2.3 <i>Delivered Parts, Components and Dimensions</i>
Type of Installation	Sections
Mounting to a Ceiling	2.5.1 <i>Mounting the Camera (D22M-IT/Secure)</i> 2.5.2 <i>Mounting the Camera (D22M-Basic)</i>
Mounting to a ceiling using the On-Wall Set 	2.2 <i>Delivered Parts, Comp. and Dim. (IT/Secure)</i> 2.4.1 <i>Delivered Parts, Components and Dim. (Set)</i> 2.5.1 <i>Mounting the Camera (IT/Secure)</i> 2.6 <i>Mounting Using the On-Wall Set</i>
Mounting to a ceiling using the In-Ceiling Set 	2.2 <i>Delivered Parts, Comp. and Dim. (IT/Secure)</i> 2.4.2 <i>Delivered Parts, Components and Dim. (Set)</i> 2.7 <i>Mounting Using the In-Ceiling Set</i>
Mounting the Vandalism Set 	2.2 <i>Delivered Parts, Comp. and Dim. (IT/Secure)</i> 2.4.3 <i>Delivered Parts, Components and Dim. (Set)</i> 2.8 <i>Mounting Using the Vandalism Set</i>
Mounting to a wall using the Wall Mount 	2.2 <i>Delivered Parts, Comp. and Dim. (IT/Secure)</i> 2.4.4 <i>Delivered Parts, Components and Dim. (Mount)</i> 2.9 <i>Mounting Using the Wall Mount</i>
Mounting to poles 	2.4.5 <i>Delivered Parts, Components and Dimensions Pole Mount</i> 2.4.4 <i>Delivered Parts, Components and Dimensions Wall Mount</i>
Final Tasks	Sections
All camera versions	2.5.3 <i>Finishing the Mounting Process</i>

[illegible]

2.2 D22M-IT/Secure: Delivered Parts, Components and Dimensions

2.2.1 Delivered Parts and Components D22M-IT/Secure

Camera housing (item 1) with mounting ring (item 1.9)



Make sure to check the delivered parts!

Item	Count	Part Name
1.1	1	Camera housing
1.2	1	Lens
1.3	1	Lock ring
1.4	1	1 transparent dome
1.5	1	Ethernet cable CAT5 0.5 m/20", installed
1.6	1	Allen wrench 3 mm
1.7	1	Toothed wrench
1.8	1	Outer shell
1.9	1	Mounting ring
1.10	4	Dowels 8 mm
1.11	4	Stainless steel washers $\varnothing 5.3$ mm
1.12	4	Stainless steel wood screws with Tox head 4.5x60 mm
1.13	1	Torx wrench TX20
1.14	4	Stainless steel Allen screws M4x16 mm
1.15	4	Stainless steel washers $\varnothing 4.3$ mm

2.2.2 Camera Housing and Connectors D22M-IT/Secure

The MOBOTIX D22M-IT/Secure consists of the camera housing (motherboard, lens, dome), the outer shell and the mounting ring.

Connectors

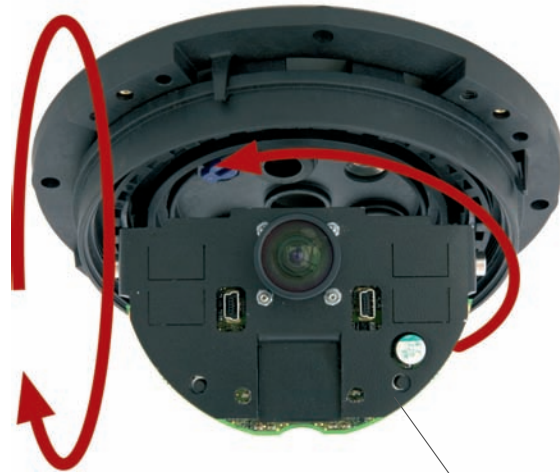
- NET (Ethernet network/power supply)
- External audio support (Microphone/Speaker)
- Mini USB/MOBOTIX bus (for future extensions)
- Slot for SD card

SD cards are supported
from software version
3.4.2



The MOBOTIX bus (Mini USB) and SD cards are only supported in D22M IT and Secure models

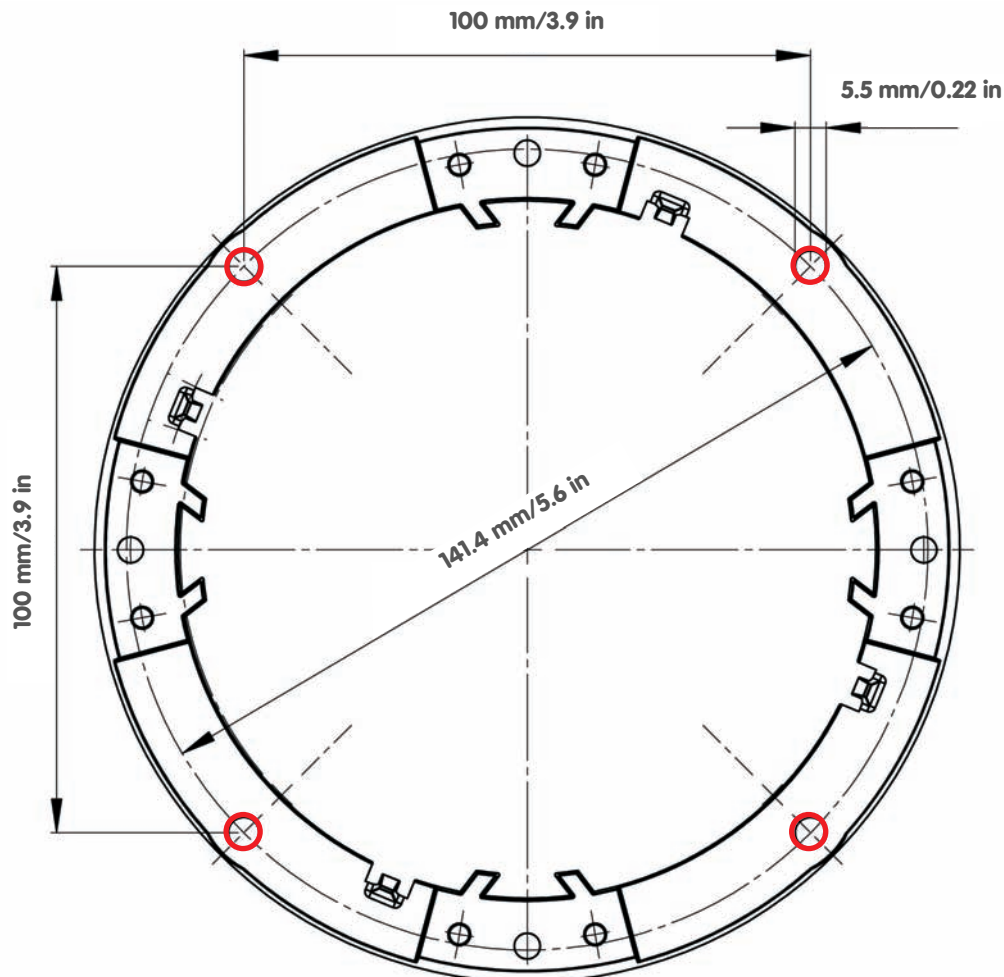
2.2.3 Dimensions of the D22M-IT/Secure



Freely positionable camera module



2.2.4 Drilling Template for the D22M-IT/Secure Mounting Ring



Find the drilling templates (scale 1:1) at the end of the manual as a fold-out

Note

Find the folded drilling template at the end of the manual.

Make sure that the drilling template is not scaled nor adjusted to the paper size when printing the PDF file. When printing the PDF file, you should print two pages onto one using 100% scaling to obtain an unscaled printout of the drilling templates.

2.3 D22M-Basic: Delivered Parts, Components and Dimensions

2.3.1 Delivered Parts and Components D22M-Basic

Make sure to check the delivered parts!



Item	Count	Part Name
2.1	1	Camera housing
2.2	1	Lens
2.3	1	Lock ring
2.4	1	1 transparent dome
2.5	1	Ethernet cable CAT5 0.5 m/20", installed
2.6	1	Allen wrench 3 mm
2.7	1	Toothed wrench
2.10	4	Dowels 8 mm
2.11	4	Stainless steel washers Ø 5.3 mm
2.12	4	Stainless steel wood screws with Tox head 4.5x60 mm
2.13	1	Torx wrench TX20
2.14	4	Stainless steel Allen screws M4x16 mm
2.15	4	Stainless steel washers Ø 4.3 mm

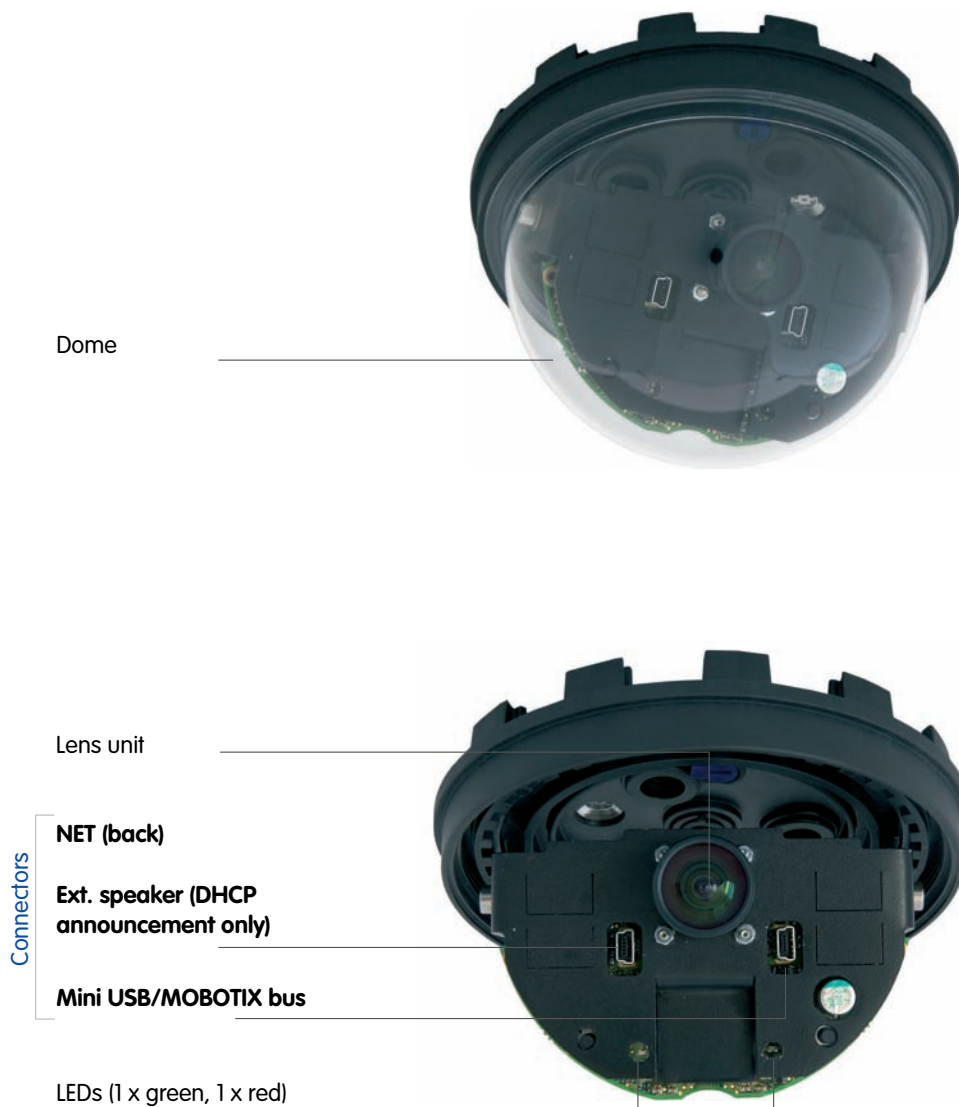
2.3.2 Camera Housing and Connectors D22M-Basic

The MOBOTIX D22M-Basic consists of the camera housing with the motherboard, the lens and the dome.

Connectors

- NET (Ethernet network/power supply)
- For external loudspeaker (Basic models only provide DHCP announcement)

The MOBOTIX bus (MxB) and the SD card slot can only be used in D22M-IT and Secure models using a future update of the camera software



The external loudspeaker of the D22M-Basic can only announce network data obtained via DHCP. The D22M Basic does not support any other audio features.

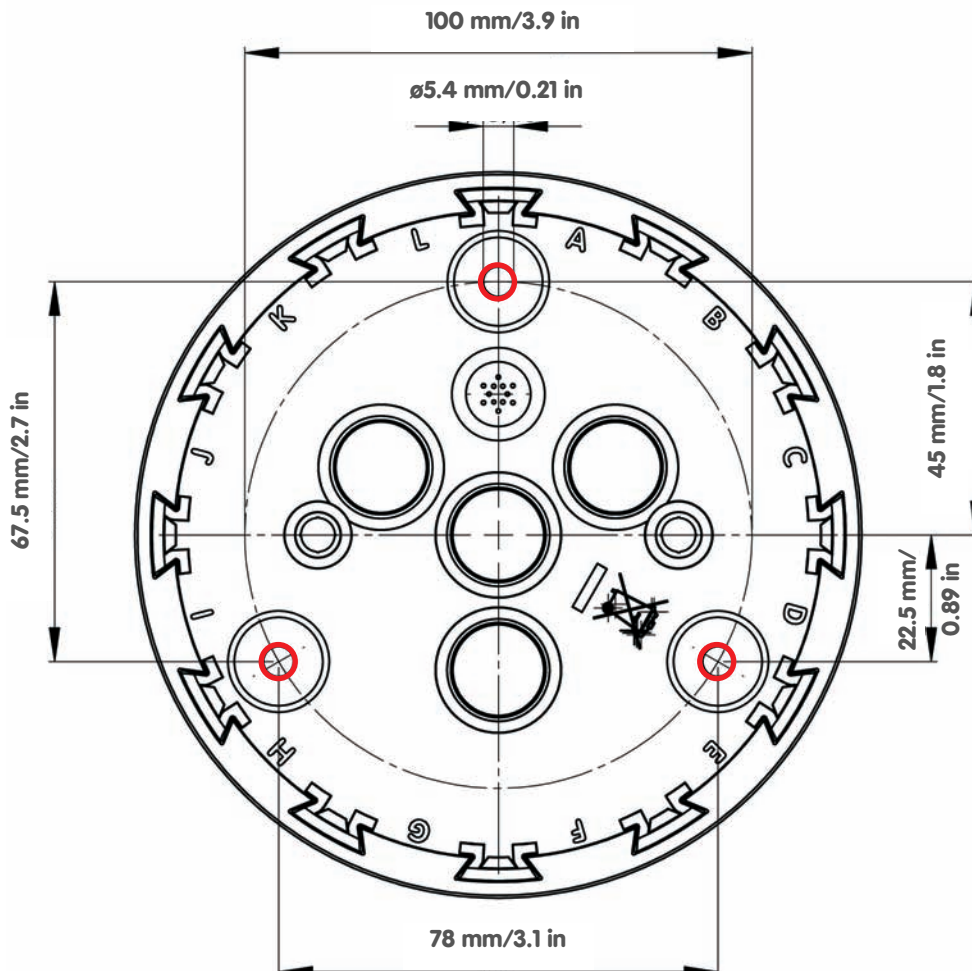
2.3.3 Dimensions of the D22M-Basic



Freely positionable camera module



2.3.4 Drilling Template for the D22M-Basic



Find the drilling templates (scale 1:1) at the end of the manual as a fold-out

Note

Find the folded drilling template at the end of the manual.

Make sure that the drilling template is not scaled nor adjusted to the paper size when printing the PDF file. When printing the PDF file, you should print two pages onto one using 100% scaling to obtain an unscaled printout of the drilling templates.

2.4 Camera Accessories: Delivered Parts, Components and Dimensions

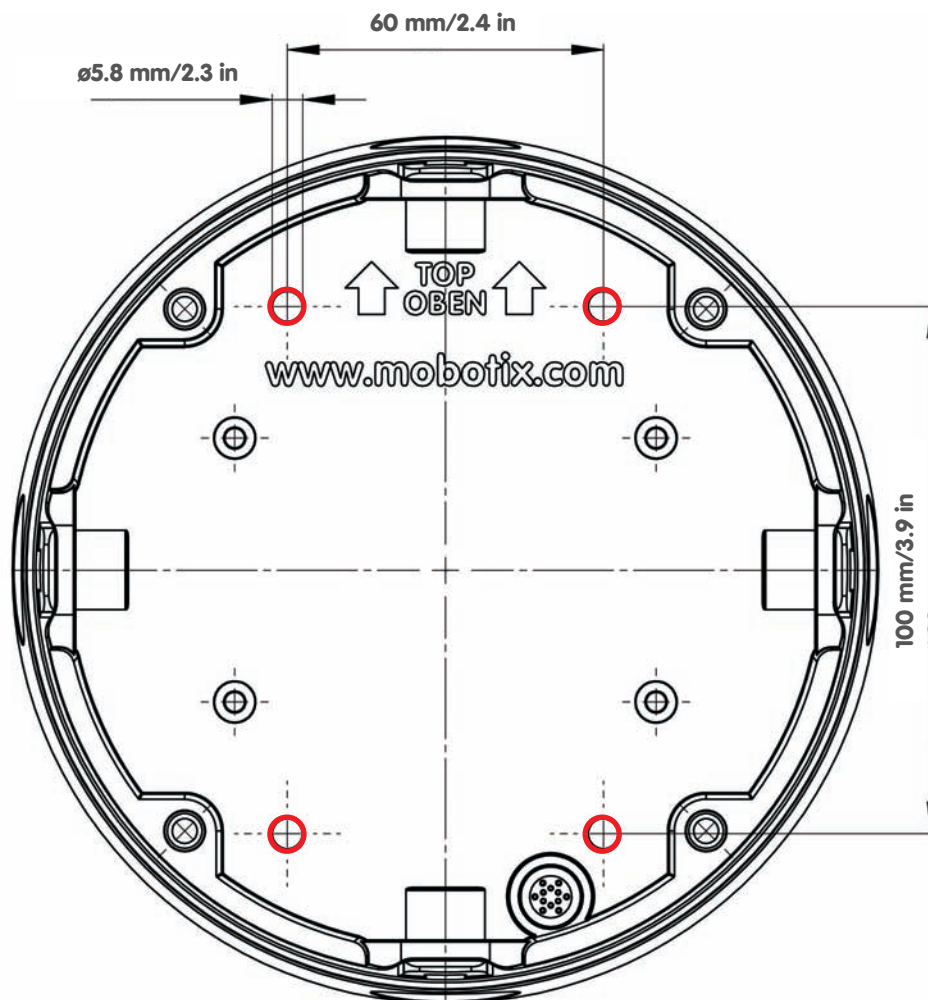
2.4.1 D22M On-Wall Set

The D22M is not included in the delivery of the On-Wall Set!



Item	Count	Part Name
3.1	1	Mounting set for D22M
3.2	4	Stainless steel Allen screws M4x35 mm
3.3	4	Stainless steel washers Ø 4.3 mm

Drilling Template for the D22M On-Wall Set



Find the drilling templates (scale 1:1) at the end of the manual as a fold-out

Note

Find the folded drilling template at the end of the manual.

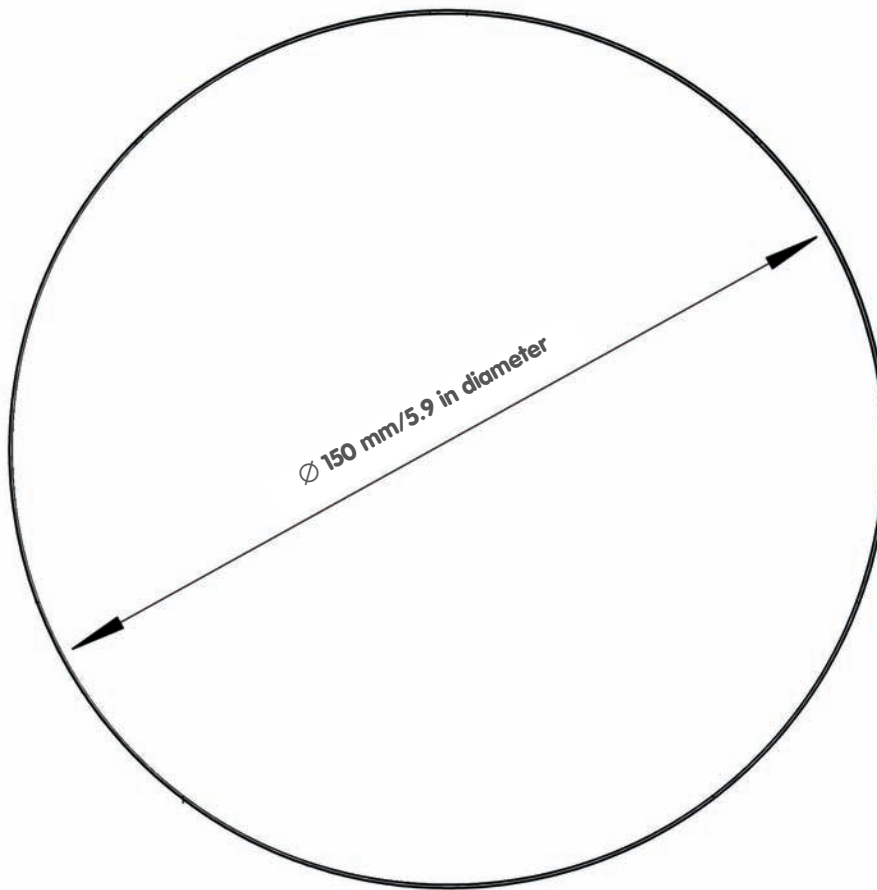
Make sure that the drilling template is not scaled nor adjusted to the paper size when printing the PDF file. When printing the PDF file, you should print two pages onto one using 100% scaling to obtain an unscaled printout of the drilling templates.

2.4.2 D22M In-Ceiling Set

The D22M is not included in the delivery of the In-Ceiling Set!



Item	Count	Part Name
4.1	1	In-Ceiling Set for D22M
4.2	1	Decoration ring
4.3	5	Winged cam
4.4	5	Clamps
4.5	2	Wrench for In-Ceiling mount

Drilling Template for the D22M In-Ceiling Set

Find the drilling templates (scale 1:1) at the end of the manual as a fold-out

Note

Find the folded drilling template at the end of the manual.

Make sure that the drilling template is not scaled nor adjusted to the paper size when printing the PDF file. When printing the PDF file, you should print two pages onto one using 100% scaling to obtain an unscaled printout of the drilling templates.

2.4.3 D22M Vandalism Set

Available colors of the D22M Vandalism Set:

- Matt
- Polished
- Powder-coated (black, white, silver-gray)

The D22M is not included in the delivery of the In-Ceiling Set!



Item	Count	Part Name
5.1	1	Vandalism ring 2 mm stainless steel for D22M cameras
5.2	4	Spacers for Vandalism ring
5.3	4	Security screws M4x16 mm
5.4	1	Driver bit for security screws
5.5	1	Reinforced dome 3 mm polycarbonate

Available Colors of the D22M Vandalism Ring

The D22M Vandalism Set provides added protection for D22M cameras. The set consists of a robust camera ring made of stainless steel and a reinforced dome made of 3 mm thick polycarbonate. A camera equipped with the Vandalism Set is perfectly suited for applications in demanding environments (such as prisons, social hot-spots, train stations, etc.).

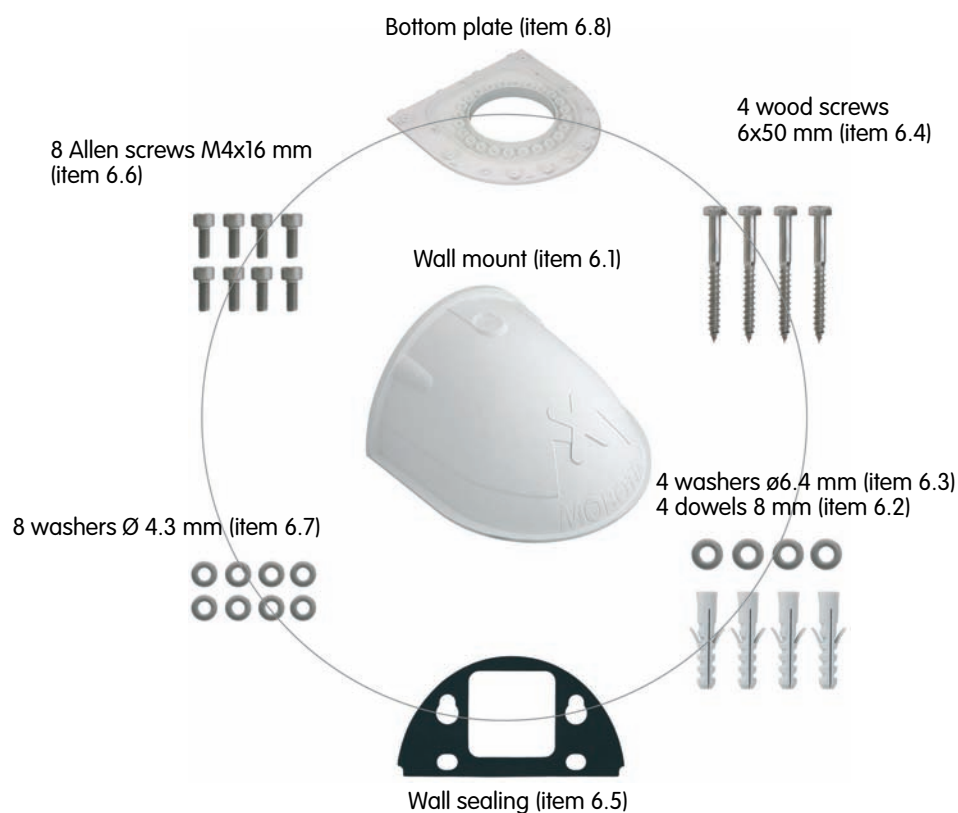
Available Colors



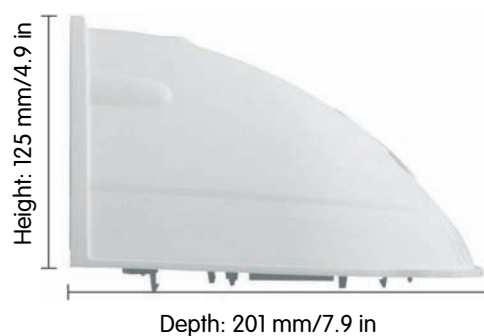
Available colors of the D22M Vandalism Set:

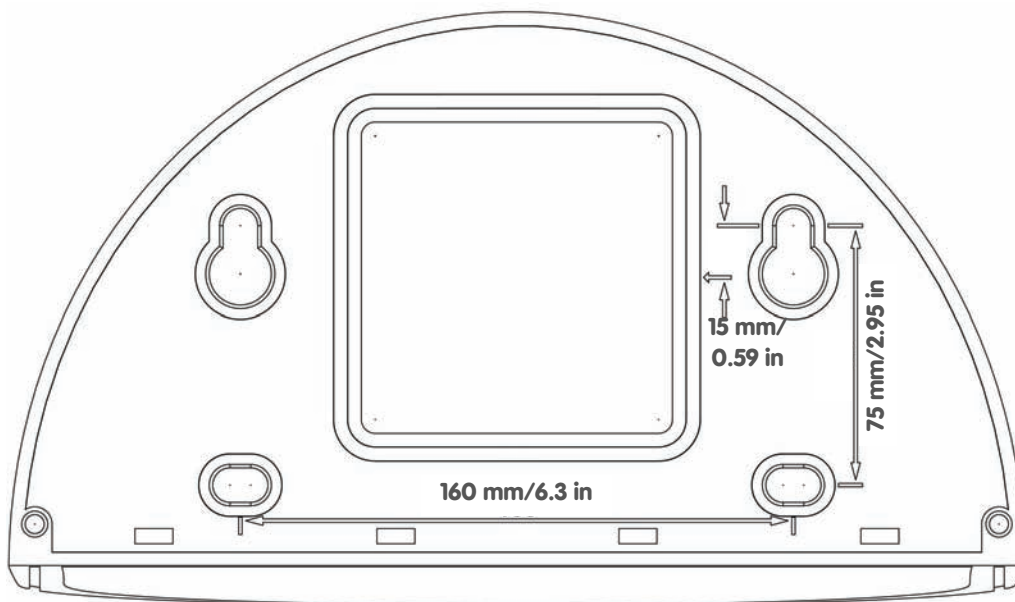
- Matt
- Polished
- Powder-coated (black, white, silver-gray)

2.4.4 D22M Wall Mount



Item	Count	Part Name
6.1	1	Wall Mount
6.2	4	Dowels 8 mm
6.3	4	Stainless steel washers Ø 6.4 mm
6.4	4	Stainless steel wood screws with hex head 6x50 mm
6.5	1	Wall sealing
6.6	8	Stainless steel Allen screws M4x16 mm
6.7	8	Stainless steel washers Ø 4.3 mm
6.8	1	Bottom plate



Drilling Template for the D22M Wall Mount

Find the drilling templates (scale 1:1) at the end of the manual as a fold-out

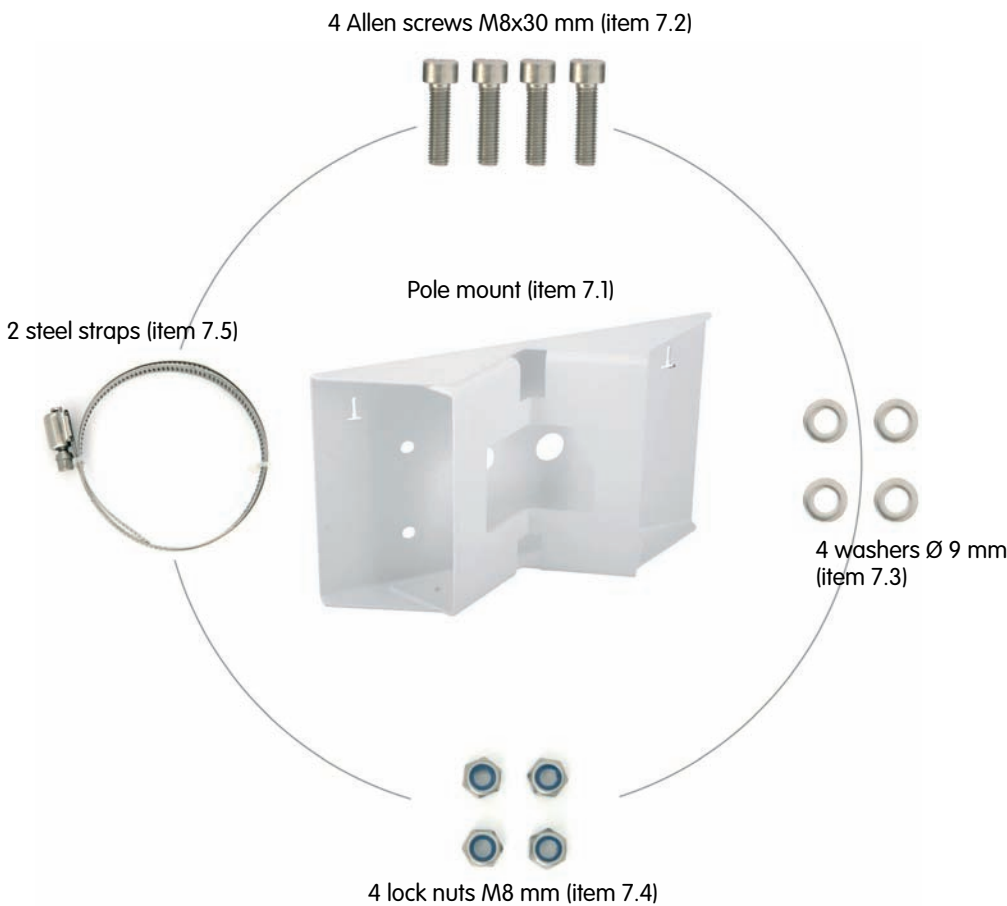
Note

Find the folded drilling template at the end of the manual.

Make sure that the drilling template is not scaled nor adjusted to the paper size when printing the PDF file. When printing the PDF file, you should print two pages onto one using 100% scaling to obtain an unscaled printout of the drilling templates.

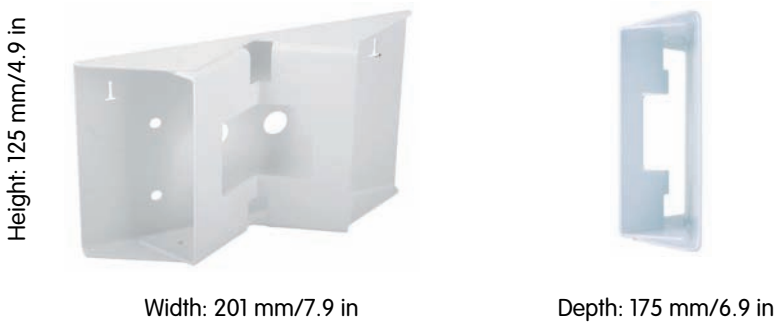
2.4.5 D22M Pole Mount

The Pole Mount can only be used in conjunction with the D22M Wall Mount



Item	Count	Part Name
7.1	1	Pole Mount, stainless steel 3 mm, white powder-coated
7.2	4	Stainless steel Allen screws M8x30 mm
7.3	4	Stainless steel washers Ø 9 mm
7.4	4	Stainless steel lock nuts M8
7.5	2	Stainless steel straps

The Pole Mount can be used for all D22M and Q22M models



A white, dome-shaped security camera is mounted on a light-colored wall. The camera has a white, curved, dome-like housing with a clear lens in the center. It is positioned in the foreground, slightly to the right. In the background, a wooden door with a vertical grain is visible, partially obscured by the camera's mounting. The overall scene is brightly lit, suggesting an indoor environment.



2.5 Mounting the Camera

2.5.1 D22M-IT/Secure

Before mounting the **MOBOTIX D22M-IT/Secure**, you need to prepare the network connection and drill the holes for the fixtures:

- **Network connection:** The network cabling is supplied through the ceiling directly above the camera. The cabling is perfectly protected and cannot be seen or damaged. When preparing the installation, you should make sure that the cable runs at least 15 cm (6 in) within the camera housing (excluding the connector itself). This will ensure that you can turn the lens unit freely later on.

Note: When using a wall outlet (either flush-mounted or on-wall), the cameras will have to be mounted using either the On-Wall set or the Outdoor Wall Mount. The cameras cannot be mounted directly on top of wall outlets.

Caution

Only use the factory pre-installed network cable of the MOBOTIX camera. It is very important that the rubber plug of the network cable reliably protects the housing from moisture entering the camera. All openings of the camera housing need to be closed off properly. This will ensure that the camera remains weatherproof.

- **Drilling the holes:** Prepare the holes in the ceiling. Make sure that you have the supplied dowels ready for this purpose. Use the supplied drilling template for the mounting ring of the D22M-IT/Secure (fold-out at the end of this manual) to mark the position for drilling the dowel holes and the holes through which the cables will be led later on.

Procedure

- Use the delivered screws to affix the camera's mounting ring to the ceiling. The outer shell will be used later in the mounting process.



- Continue with section 2.5.3, *Finishing the Mounting Process*.

Find the folded drilling template for the mounting ring of the D22M-IT/Secure models at the end of the manual!

Maximum torque for all screws is 1 to 1.2 Nm (0.74 lbf ft)

2.5.2 D22M-Basic

Before mounting the **MOBOTIX D22M-Basic**, you need to prepare the network connection and drill the holes for the fixtures:

- **Network connection:** The network cabling is supplied through the ceiling directly above the camera. The cabling is perfectly protected and cannot be seen or damaged. When preparing the installation, you should make sure that the cable runs at least 15 cm (6 in) within the camera housing (excluding the connector itself). This will ensure that you can turn the lens unit freely later on.

Note: As an alternative, you can also connect the camera above a wall outlet (either flush-mounted or on-wall types). Note, that the cabling remains visible in this case. The D22M-Basic model cannot be mounted directly on top of wall outlets.

Caution

Only use the factory pre-installed network cable of the MOBOTIX camera. It is very important that the rubber plug of the network cable reliably protects the housing from moisture entering the camera. All openings of the camera housing need to be closed off properly. This will ensure that the camera remains weatherproof.

- **Drilling the holes:** Prepare the holes in the ceiling. Make sure that you have the supplied dowels ready for this purpose. Use the supplied drilling template for the D22M-Basic (fold-out at the end of this manual) to mark the position for drilling the dowel holes and the holes through which the cables will be led later on.

Find the folded drilling template of the D22M-Basic at the end of the manual!

Procedure

- Remove the camera dome. Take the delivered plastic foil or a cotton cloth and remove the dome by turning it in counter-clockwise direction.
- Unplug the pre-installed network cable from the network connector at the inside of the camera. **Make sure that you do not touch any electronic parts inside! Static electricity could destroy these parts when touching them.**



- Release the internal part of the camera by turning the ring inside in counter-clockwise direction using the supplied toothed wrench. While doing so, hold the camera at the lens unit to prevent it from turning.



- Disengage the internal part of the camera with the lens unit from the base of the housing.



- Position the base of the camera housing over the drilled holes and the prepared cable exit in the ceiling. If the holes in the base of the housing are closed, push through the holes using a suitable tool or use a suitable drill bit to open the holes. **Caution: These holes will need to stay closed on D22M-IT/Secure models.**



Make sure that the cable is at least 15 cm (6 in) long within the camera housing (excluding the connector itself), as in the factory-installed cable.

It is very important that the rubber plug of the network cable reliably protects the housing from moisture entering the camera. This will ensure that the camera remains weatherproof.

- Use the delivered screws to mount the base of the camera to the ceiling.

If the cabling from the ceiling is not directly beneath the camera, make sure that the network cable is not damaged by one of the feet of the camera base. When tightening the screws of the camera base, the base will lock the cable in place, thus securing the cable against the ceiling. The cable is now firmly installed and cannot be pulled out or repositioned.



Maximum torque for all screws is 1 to 1.2 Nm (0.74 lbf ft)

- Insert the internal part of the camera with the lens unit into the mounted base of the housing and secure it by turning the two blue clamps in clockwise direction using the supplied toothed wrench or a screwdriver. This will prevent the internal part of the camera to accidentally fall out of the base before it has been secured. Now secure the internal part of the camera by turning the toothed ring by hand in clockwise direction, as long as you can still easily turn the internal part of the camera.



- Connect the network cable to the network connector of the camera. Make sure that the cable loop is running properly as shown in the figure.



- Position the camera by turning and tilting the lens unit so that it points into the desired direction (**Note:** the SD card slot has to point **downwards** for the camera's live image to be correct). Never use force when adjusting the direction of the camera, as this could damage the camera beyond repair. The internal part of the camera with the lens unit should turn and tilt easily, but it should not reposition itself. This could mean that you have to loosen the Allen screws at both sides of the lens unit using the supplied Allen wrench.



Maximum torque for all screws is 1 to 1.2 Nm (0.74 lbf ft)

- Continue with section 2.5.3, *Finishing the Mounting Process*.

2.5.3 Finishing the Mounting Process

Establishing a Connection to the Camera

- **Establish a connection to the camera** as described in section 3.4, *Establishing a Connection to the Camera*.

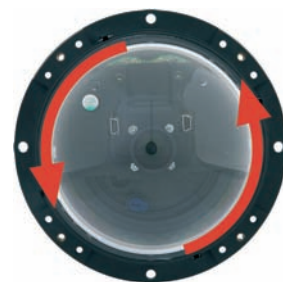
Adjusting the Lens, Visual Check

Make sure that you see the live image of the camera on the monitor of your computer or laptop. Now adjust the lens until you see the desired image area on your monitor.

- **Remove the camera dome.** Take the delivered plastic foil or a cotton cloth and remove the dome by turning it in counter-clockwise direction. Make sure that you remove the camera's outer shell on IT/Secure models before you attempt to do this.
- **Slightly loosen the toothed ring** inside by turning it in counter-clockwise direction using the supplied toothed wrench. **Also slightly loosen the two Allen screws at both sides of the lens unit** by turning them in counter-clockwise direction using the supplied Allen wrench.

Loosen the outer shell and the Allen screws only slightly, so that you can turn the internal part of the camera and tilt the lens unit without using excessive force. The internal part and the lens unit should not reposition themselves.

- **Fine-tune the image area that is displayed on a computer monitor** by turning and tilting the lens unit accordingly. Never use force when adjusting the direction of the camera, as this could damage the camera beyond repair. The internal part of the camera with the lens unit should turn and tilt easily, but it should not reposition itself.



- Once you are seeing the desired image area, **tighten the Allen screws at the sides of the lens unit** (in clockwise direction) and the **toothed ring** inside the camera. Do not use excessive force when doing so to avoid damaging the camera.
- Release the lens' lock ring** and **adjust the image focus** by turning the lens in its holder. Check the image on the computer monitor. Make sure that you tighten the lock ring again once you are finished. **Never turn the lens to far into the lens mount and never apply excessive force when doing so as this would damage the lens mount otherwise.**



Maximum torque for all screws is 1 to 1.2 Nm (0.74 lbf ft)

Lock ring: Secure the lens against vibrations

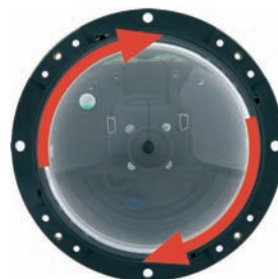
Caution (only 135 mm Tele Lenses)

Image Focus: Due to the lens effect of the dome, the focus of the 135 mm tele lens is shifting slightly once the dome has been mounted. Before mounting the dome, the tele lens should be turned about **90° in clockwise direction** (as seen from the lens' front). Make sure that you check the focus of the live image in your browser with the dome installed and re-adjust the lens, if required.

Lenses are adjusted manually

Mounting the Dome and the Camera's Outer Shell

- Mount the dome.** Take the delivered plastic foil or a cotton cloth, insert the dome into its seat and turn it in clockwise direction. You should once again control the sharpness of the camera image on a computer monitor.
If required, clean the lens gently using a lint-free cotton cloth before installing the dome. Do not apply excessive pressure onto the glass surface when cleaning the lens!
- Mount the outer shell** (IT/Secure models only). Use the delivered Allen screws (or the security screws and the spacers when mounting the outer shell of the Vandalism Set).



Maximum torque for all screws is 1 to 1.2 Nm (0.74 lbf ft)

Caution

Only use the factory pre-installed network cable of the MOBOTIX camera. It is very important that the rubber plug of the network cable reliably protects the housing from moisture entering the camera. All openings of the camera housing need to be closed off properly. This will ensure that the camera remains weatherproof.

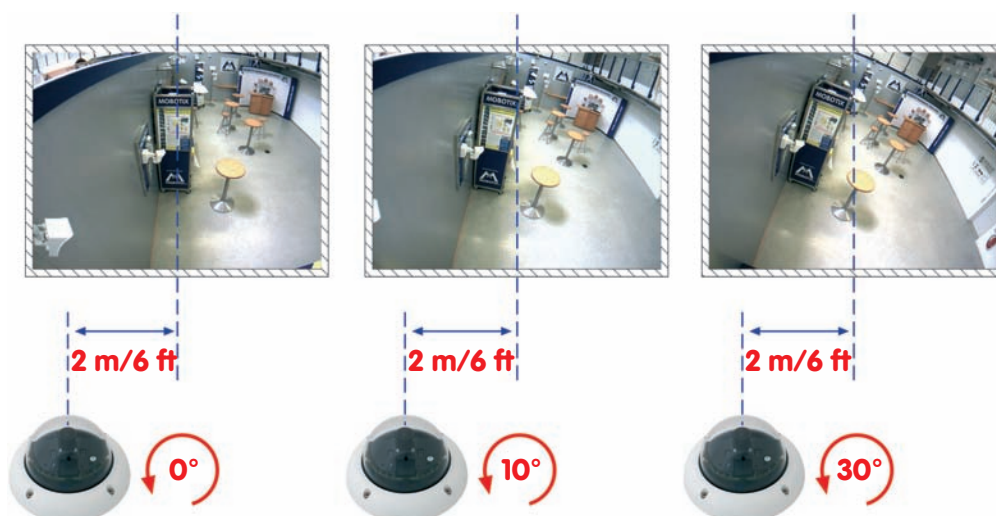
2.5.4 Notes on Mounting the Camera to a Wall Without the Wall Mount

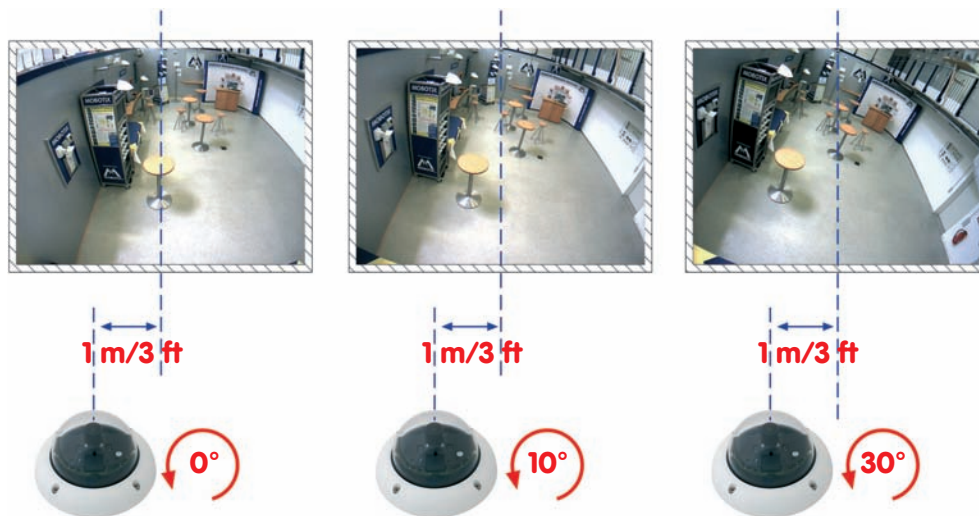
The **MOBOTIX D22M** has been designed to be mounted to either ceilings or to a wall, when using the Wall Mount. It is also possible to mount the D22M directly to a wall (without using the Wall Mount), but doing so will result in reduced flexibility for positioning the lens. The following section contains some hints on these restrictions and tips for mounting the camera to a wall.

When mounting the camera onto a wall, the camera image will show more wall area (and less room area), the more you move the position of the camera from the center of the wall toward a corner.



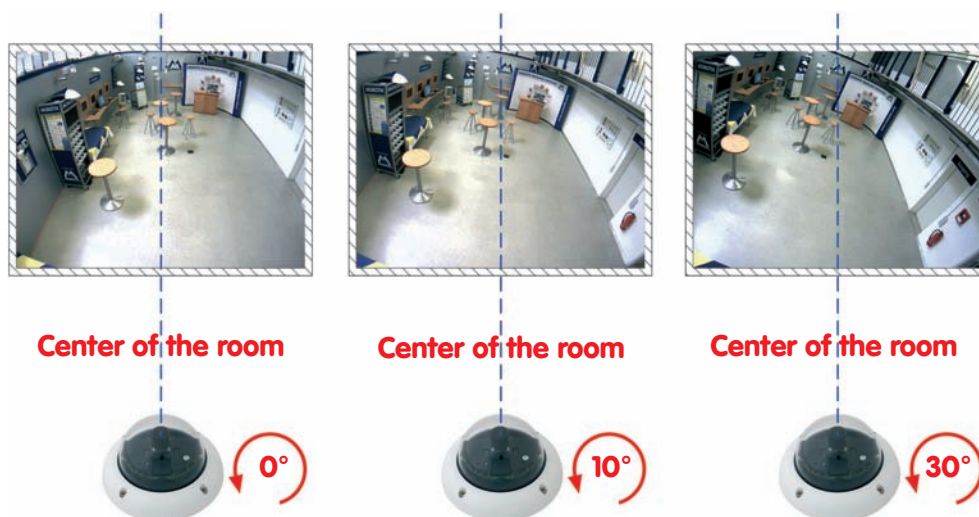
In order to show a larger portion of the room (and less wall area) when using a MOBOTIX D22M mounted to a Wall Mount, you can turn the base of the camera and the lens unit around its vertical axis. The camera image always stays upright. When mounting the D22M directly onto a wall, you can also turn the base of the camera around its vertical axis to show more room area, but the image now appears slightly tilted.





Tilt the camera to see a larger area of the room (camera mounted 1 m/3 ft to the left of the center)

This effect also appears when mounting a D22M at the center of a wall and you are turning the base of the camera. This will also allow to capture a larger area of the room with the camera, but the image is again tilted.



Note

When mounting the D22M to a wall, you should always use the wall mount.

When **mounting the camera directly to the wall** without using the wall mount, you should mount the camera in the **center of a wall**, if you would like to maximize the area monitored by the camera.

If you cannot install the D22M to the ceiling and using the D22M wall mount is also not possible, you should consider using a **MOBOTIX D12** instead. MOBOTIX D12 models are more flexible than the D22M when positioning the camera modules thanks to the larger housing.

2.6 Mounting the D22M to a Ceiling Using the On-Wall Set

Before mounting the MOBOTIX D22M-IT/Secure to an indoor or outdoor location using the On-Wall Set, you need to prepare the network connection and drill the holes for the fixtures:

- **Network connection:** You can use any one of the four openings in the On-Wall mount to guide the cabling into the camera. When using the On-Wall Set, you cannot mount the camera directly on top of the wall outlet (regardless whether it's a flush-mounted outlet or an above-the-wall model).

When preparing the installation, you should make sure that the cable is at least 15 cm (6 in) long within the housing of the On-Wall Set (excluding the connector itself). This will ensure that you can turn the lens unit freely later on. Cable that is too long can be stored easily within the On-Wall mount.

- **Drilling the holes:** Prepare the holes in the ceiling. Make sure that you have the supplied dowels ready for this purpose. Use the supplied drilling template for the D22M On-Wall Set (fold-out at the end of this manual) to mark the position for drilling the dowel holes and the holes through which the cables will be led later on.

Find the folded drilling template at the end of the manual!

Caution

Note that the On-Wall Set can also be used in outdoor applications (IP65). When doing so, make sure that you seal off the holes at the back of the housing using good-quality silicone sealant.

Note

When mounting the MOBOTIX D22M to a wall, you should always use the D22M wall mount instead of the On-Wall Set.

Seal off the holes at the back of the housing using silicone sealant!

Do not seal off the condensation vent!

Maximum torque for all screws is 1 to 1.2 Nm (0.74 lbf ft)

Procedure

- Apply a sufficient amount of silicone around the holes at the back of the housing to prevent water from entering. When doing so, **make sure that you do not block or seal off the condensation vent!**
- Use the delivered screws to mount the On-Wall Set (without the camera) to the ceiling.
- If the cables are guided through one of the openings in the On-Wall Set, insert the cables into the On-Wall mount.



- Disengage the mounting ring from the housing of the D22M-IT/Secure. This ring is not required when mounting the camera to the On-Wall Set.



- Connect the network cable to the network cable of the camera using a patch cable connector. Make sure to leave enough unused cable within the housing. This will ensure that you can turn the lens unit freely later on. Cable that is too long can be stored easily within the On-Wall mount.



- Now press the D22M into the guides of the On-Wall mount. The tapered guides on the back of the D22M housing fit exactly into the openings of the On-Wall mount.



- Continue with section 2.5.3, *Finishing the Mounting Process*.



Find the drilling template
at the end of the manual

2.7 Mounting the D22M to a Ceiling Using the In-Ceiling Set

Before mounting the MOBOTIX D22M-IT/Secure to an indoor location using the In-Ceiling Set, you need to prepare the network connection and drill the hole for the camera:

- **Network connection:** The network cabling is supplied through the ceiling directly above the camera.

When preparing the installation, you should make sure that you have at least 15 cm (6 in) of unused cable.

- **Hole for the camera:** Prepare the hole for the camera. The hole should have a diameter of 150 mm (6 in)!

Procedure

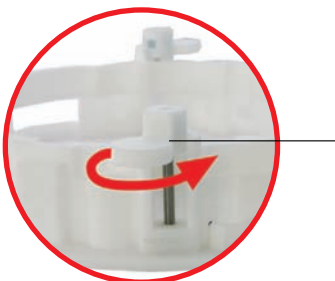
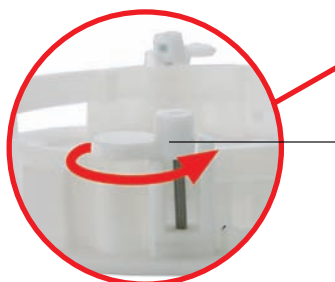
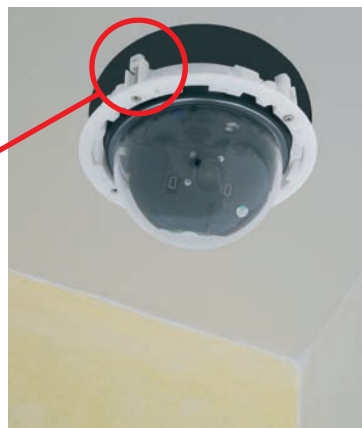
- **Insert the camera into the In-Ceiling mount without the outer shell and the mounting ring.** The tapered guides on the back of the D22M housing fit exactly into the openings of the In-Ceiling mount.



- **Connect the network cable** to the network cable of the camera **using a patch cable connector.**



- Insert the **In-Ceiling Set with the camera into the hole in the ceiling**. Tightening the integrated mounting screws will automatically secure the In-Ceiling mount to the ceiling.



Winged cam

The winged cams automatically secure the In-Ceiling Set in the ceiling when tightening the screws (see detail pictures)

- Finally, **press the decoration ring** onto the mount and lock in place by turning it in clockwise direction.



Dismounting

- Use the **wrench for the In-Ceiling mount** included in the delivery to dismount the decoration ring. Insert the wrench as shown in the figure and turn the ring in counter-clockwise direction.
- Remove the camera.
- Loosen the screws of the In-Ceiling mount (this will automatically retract the winged cams). You can now remove the In-Ceiling mount from the ceiling.



Wrench for In-Ceiling mount

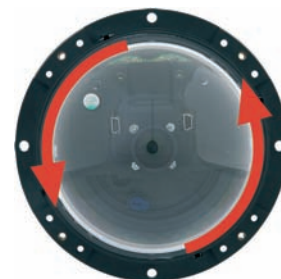
2.8 Mounting the D22M Vandalism Set

In order to install the Vandalism Set, replace the regular outer shell and the Allen screws with the stainless steel shell, the security screws and the four spacers of the Vandalism Set. Likewise, replace the dome of the D22M-IT/Secure with the reinforced dome of the Vandalism Set.

- **Remove the outer shell.** Remove all four Allen screws using the supplied Allen wrench. Take off the outer shell.

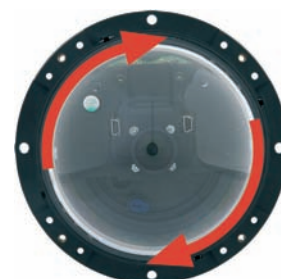


- **Remove the camera dome.** Remove the dome of the D22M-IT/Secure (by turning it in counter-clockwise direction), then package and store the dome.



- If required, **clean the lens** gently using a lint-free cotton cloth. Do not apply excessive pressure onto the glass surface when cleaning the lens! Make sure that you do not change the lens focus or the lens unit when doing so. You should once again control the sharpness of the camera images on a computer monitor.

- **Mount the reinforced dome of the Vandalism Set.** Use a soft cotton cloth and mount the reinforced dome by placing the dome into its seat and turning it in clockwise direction. If required, clean the dome gently using a lint-free cotton cloth before installing it. You should once again control the sharpness of the camera images on a computer monitor.



- **Mount the stainless steel shell of the Vandalism Set. Do not forget to insert the four spacers of the Vandalism Set into their seats in the camera housing!**



Spacers for Vandalism Set



- **Mount the supplied stainless steel shell with the security screws and use the supplied two-hole driver bit to firmly tighten the screws.**



Security screws and two-hole driver bit



2.9 Mounting the D22M to a Wall Using the Wall Mount

Before mounting the **MOBOTIX D22M-IT/Secure** with the Wall Mount you need to prepare the network connection and drill the holes for the fixtures:

- **Network connection:** The network cabling is supplied through the opening in the back of the wall mount. The cabling is perfectly protected by the mount and cannot be seen or damaged. The wall mount can be mounted directly on top of wall outlets (flush-mounted or above-the-wall types; maximum dimensions of the outlet: 88 x 80 mm (3.5 x 3.2 in) width x height).

Use the factory pre-installed network cable of the D22M (**50 cm (20 in)** length). This will ensure that you can turn the lens unit of the D22M freely later on.

Caution

Only use the factory pre-installed network cable of the MOBOTIX camera. It is very important that the rubber plug of the network cable reliably protects the housing from moisture entering the camera. All openings of the camera housing need to be closed off properly. This will ensure that the camera remains weatherproof.

Find the folded drilling template of the D22M Wall Mount at the end of the manual!

- **Drilling the holes:** Prepare the holes in the wall. Make sure that you have the supplied dowels ready for this purpose. Use the supplied drilling template for the D22M Wall Mount (fold-out at the end of this manual) to mark the position for drilling the dowel holes and the holes through which the cables will be led later on.

Procedure

- **Disengage the mounting ring from the housing** of the D22M-IT/Secure. This ring is not required when mounting the camera to the Wall Mount.
- **Use the delivered screws to mount the Wall Mount (without the camera) to the wall** (directly on top of the cabling or the wall outlet).



Maximum torque for all screws is 1 to 1.2 Nm (0.74 lbf ft)

- **Connect the network cable** to the network cable of the camera **using a patch cable connector** (or plug the cable directly into the RJ45 wall outlet). Make sure to leave enough unused cable within the housing. This will ensure that you can turn the lens unit freely later on. Cable that is too long can be stored easily within the housing.



- **Now press the D22M into the guides of the wall mount.** The tapered guides on the back of the D22M housing fit exactly into the openings of the On-Wall mount.



- Continue with section 2.5.3, *Finishing the Mounting Process*.



2.10 Notes

2.10.1 Cleaning Instructions

Cleaning the Dome

- In order to protect the dome from being scratched and from getting dirty, only handle the dome using a soft cotton cloth or the protective plastic of the camera's shipping box.
- You should clean the dome at regular intervals. Always use a lint-free cotton cloth for this purpose.
- If the dirt is more persistent, add a mild alcohol-free detergent without abrasive particles.
- Make sure you instruct cleaning personnel on how to clean the camera.

Cleaning the Lens

- If the lens is dirty from the installation process, clean the lens using a lint-free cotton cloth. Make sure that the lens is still in focus after cleaning and adjust the lens' focus if required.

2.10.2 Wiring, Fire Prevention, Lightning and Surge Protection



When installing the wiring in or out of buildings, make sure you always adhere to the relevant regulations on wiring, fire prevention and protection against lightnings.

MOBOTIX recommends having MOBOTIX cameras installed only by certified specialists accustomed to installing network devices and having proper respect for the applicable regulations regarding lightning protection and **fire prevention** as well as the current technology for preventing damages from electrical surges.

Find more information on the subject at the **International Electrotechnical Commission** (IEC, www.iec.ch) or at a manufacturer of protection devices against lightning and electrical surges, such as Dehn (www.dehn.de).

Wiring

When installing the wiring, make sure you follow these guidelines:

- **Data cable:** Make sure you only use double-shielded CAT 5/7 cable (**S/STP**) for Ethernet connections. 
- **Outdoors:** Installing the camera outdoors requires special precautions and measures regarding the cables as well as lightning and surge protection (see further  below in this section).
- **Wire lengths:** The cable segments must not exceed the maximum allowed cable lengths in order to ensure proper data transfer (see section 3.3, *Connecting the Camera to the Network and to the Power Supply*).

- **Avoid induction:** When running data cables parallel to existing regular power lines or high-voltage wires, make sure you observe the minimum distances to the power cables.

Fire Prevention

When installing the power lines to the camera, make sure you always adhere to the relevant regulations on wiring and fire prevention at the site of the installation.

Lightning and Surge Protection

To prevent damage from lightnings and surges, make sure you follow these guidelines:

- **Lightning conductors:** In areas exposed to lightning (e.g. on roofs), a distance holder (1 m (3 ft) higher, 1 m (3 ft) away from the camera) and proper lightning conductors need to be installed in order to prevent lightning strikes into the camera and to ensure that the energy of a lightning strike is properly led to the ground.
- **Surge protection:** Make sure you have installed proper protection against electrical surges in order to prevent damage to the camera, the building and the network infrastructure. This includes surge protectors for 19" racks, adding an uninterruptible power supply (UPS) to the MOBOTIX camera, and installing surge arresters or similar for routers, switches, servers, etc.

2.11 Camera Accessories

Power supply (MX-SNT-E/U/GB/J/AUS01-30-RJ)

The MOBOTIX power supply is required if you do not use a **Network Power Rack** or **Network Power Box**, or a PoE-compatible switch or router.



Network Power Adapter (MX-NPA-3-RJ)

The Network Power Adapter allows injecting the power supply for the MOBOTIX camera into the network cable. It thus allows using the network cable for connecting to the camera and for remotely supplying power (up to 100 m (300 ft)). The Network Power Adapter is required, if you are using the universal power supply, and power is not supplied using a PoE switch/router or a MOBOTIX Netpower Box/Rack.



Netpower Box for up to 4 Cameras (MX-NPR-4)

The MX-NPR-4 allows supplying power to up to four MOBOTIX cameras via the network cable. The NPR-4 thus replaces four separate power supplies and four Network Power Adapters. The Netpower Box delivery includes a (detachable) clip at the back, which simply clicks onto DIN rails.



Netpower Rack for 8/20 Cameras (MX-NPR-8/20)

The MX-NPR-8/MX-NPR-20 allow supplying power to up to 8/20 MOBOTIX cameras, respectively, via the network cable. These NPRs thus replace 8/20 separate power supplies and the same number of Network Power Adapters; they are easily mounted in 19" racks (2 rack units).



Advantages of MOBOTIX PoE Products

- Zero maintenance and reliable without fans.
- Higher reliability of the system as a whole, since standard switches without PoE can be used (lower risk of failure).
- Easy installation on DIN rails using supplied adapter (**MX-NPR-4**) or in 19" racks (**MX-NPR-8/20**).

On-Wall Set (MX-D22-OPT-AP)

The On-Wall set can reliably protect external cables if the cables cannot be guided from below the housing but have to be led above the wall for technical or legal reasons. In addition, the On-Wall mount provides ample space for extra modules.



The D22M is **not** included in the delivery of the In-Ceiling Set! (IP65)

In-Ceiling Set (MX-D22-OPT-TC)

The In-Ceiling Set allows mounting the camera in fake ceilings, for example. This type of installation provides optimum protection for the camera and reduces the visible profile to a minimum since only the dome is visible.

**Vandalism Set (MX-D22-OPT-VANDAL-...)**

The Vandalism Set provides added protection for the camera. The set consists of a robust camera ring made of stainless steel and a reinforced dome made from 3 mm thick polycarbonate. A camera with vandalism set is perfectly suited for applications in demanding environments (such as prisons, social hot-spots, train stations, etc.).



The vandalism ring is available in these versions:

- matt
- polished
- powder-coated (black, white, silver-gray)

Wall Mount (MX-D22-OPT-WH)

The Wall Mount is the ideal solution for mounting the cameras to walls for indoor and outdoor applications. The camera is absolutely dustproof and resistant against water jets (IP65). The wall mount also covers RJ45 wall outlets and also has ample space for additional modules.



Pole mount made of 3 mm stainless steel

Pole Mount (MX-D22-OPT-MH)

The Pole Mount can only be used in conjunction with the Wall Mount. The supplied stainless steel straps allow attaching the mount to poles with diameters between 60 and 180 mm (2.4 to 7.1 in).

The Pole Mount is made from 3 mm white powder-coated stainless steel and is just as robust and maintenance-free as the outdoor Wall Mount.



[illegible]

3 OPERATING THE CAMERA

3.1 General Procedure

The MOBOTIX camera **does not require any software installation**; all you need is your preferred browser with JavaScript support to operate the camera. Thus, the MOBOTIX camera is supported by all common operating systems (such as **Windows**, **Macintosh** and **Linux**, ...).

3.1.1 Establishing the Power Supply to the Camera

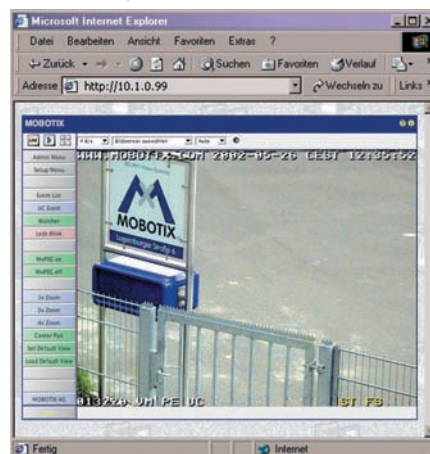
You can choose between the following options:

- **External power supply and Network Power Adapter (MX-NPA-3-RJ):** Power supply of one camera injected into the network cabling (max. length 100 m (110 yd)), from the NPA to the **10BaseT/NET** connector of the camera (see sections 3.3.3 and 3.3.4).
- **Network Power Box/Rack (MX-NPR-4, or 8/20):** Power supply of 4/8/20 cameras injected into the network cabling (max. length 100 m (110 yd)), from the NPR to the **10BaseT/NET** connector of the camera (see section 3.3.5).
- **Power-over-Ethernet:** Power supply using network components that are conforming to the PoE standard **IEEE 802.3af** (see section 3.3.6)

3.1.2 Connecting the Camera

- **Ethernet interface of the camera** (10/100 Mbps Ethernet): Connect directly from a computer (using a crossover cable) or by using a Network Power Adapter or a switch and a regular patch cable. Open a browser and enter the IP address printed on the camera label (e.g. **10.1.0.99**).

If your computer is *not* in the same IP address range as the camera (**10.x.x.x**), you should install **MxControlCenter** (see section 3.4.6). Next, use the integrated Zeroconf/Bonjour functionality to establish a connection to the camera. If this is not possible, you can temporarily assign a matching IP address to your computer (see section 3.4.1).



Once a connection has been established, click on the **Admin Menu** button to start configuring the camera. The **Admin Menu** controls all network settings (IP address, netmask, DHCP, etc.) and other options.

MOBOTIX PoE products do not require any fans and are robust and reliable!

PoE components (IEEE 802.af) should not have fans as this would decrease the overall reliability of the entire system

Automatic camera search using **MxControlCenter** and **Zeroconf/Bonjour**

Note

After first booting a new MOBOTIX camera or after resetting to factory defaults, accessing the Administration menu (**Admin Menu** button) will automatically start the **Quick Installation** wizard. This is where you configure the most important camera parameters in a step-by-step manner. If you have completed the Quick Installation wizard at least once, the standard Administration menu will open when you click on the **Admin Menu** button.

Always use **Quick Installation** for initial configuration

The configuration follows these steps:

- 1) Establish the first connection (via the Ethernet network).
- 2) Set the parameters for the desired connection type (Quick Installation).
- 3) Set the event control (Events, Actions and Messages); see chapter 7, *Events, Actions and Messages* in the *Software Manual*.
- 4) Set the storage parameters (internal storage, FTP, file server or Flash device).
- 5) Store the configuration in the camera's permanent storage (flash).



Live image: <http://preparkcam.mobotixserver.de>

3.2 Overview of the Configuration Settings

Using the Quick Installation wizard

After booting the camera for the first time or after resetting it to factory defaults, any access to the administration menu (**Admin Menu** button) will start the **Quick Installation**.

This wizard will guide you through the most important settings of the camera (configuration of the network interface, image control, etc.) and can also be used to reset the camera to its factory settings.

It is also recommended to use **Admin Menu > Quick Installation** later on as well, e.g. if you would like to change connection parameters or add a new connection type.

Administration and setup of the camera

Basic configuration tasks of the camera (e.g. passwords, interfaces, software updates) are carried out from the administration menu (**Admin Menu** button), which requires the corresponding access rights (*admins* group).

Open the **Setup Menu** (button) and find the dialogs for changing the image, event and recording settings in the **Image Control** and **Event Control** sections. These options are also available for users belonging to the *users* group.

Some of these settings can be changed using the corresponding pull-down menus above the image on the Live screen.

The image settings are already optimized

The factory image settings of MOBOTIX cameras deliver excellent images for most application scenarios and should not be changed. If you do wish to make changes, your changes should be minor and gradual. Use the options of the **Image Programs** Quick Control for easily and quickly adjusting the camera to the current **application scenario**, since the image programs perform several configuration steps at once. For additional information on the **image programs**, see section 5.5.2, *Image Programs*, in the *Software Manual*.

If you would like to reset changes without resetting the complete configuration to factory defaults, you can use the **Factory** button at the bottom of the dialog to reset only this dialog's settings. If you would like to reset all image settings, you can do so using the **Manage Settings > Restore Image Settings** Quick Control above the image on the Live screen.

Always use **Quick Installation** for initial configuration!

Admin Menu
User: **admin**
Password: **meinsm**

Setup Menu

Recommendation: Always use factory image settings!

All changes are temporary

All changes to the configuration are only temporary and can thus be tested easily. Restoring the previous configuration settings can be achieved using the **Restore** button in most dialogs or by running **Admin Menu > Restore last stored configuration from flash** (see also section 5.9, *Managing Settings*, in the *Software Manual*).

Once you have finished configuring the camera, you should always **store the settings in the camera's permanent memory**. You can do so in each dialog (clicking on **Set** at the bottom of each dialog will temporarily set the changes; clicking on **Close** will ask you to store the complete configuration in the camera's permanent memory) or in the **Configuration** section of the administration menu (**Admin Menu > Store current configuration into flash memory**).

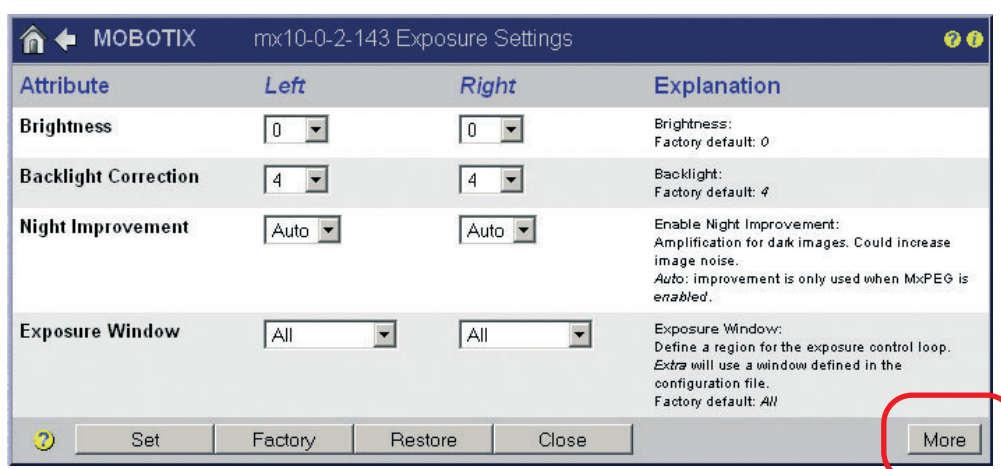
The **Configuration** section of the administration menu provides more functions for storing, copying and managing camera settings. For additional information on this topic, see chapter 5, *Basic Camera Configuration*, in the *Software Manual*.

A camera that keeps time

Apart from a multitude of possibilities for controlling the camera using time (time tables, holiday and vacation, scheduled tasks, etc.), the camera can also **synchronize its internal clock**. This allows you to keep the camera in synch manually with a computer or fully automatic using a time server or another MOBOTIX camera. The camera can use NTP time servers or time servers providing Time Protocol (RFC 868). For additional information on this topic, see section 5.4.2, *Date and Time / Time Zones and Time Servers*, in the *Software Manual*.

The "More" and "Less" buttons

When opening some of the camera dialogs, only the most important configuration options are displayed by default. These dialogs have a **More** button in the bottom right corner; click on it to display additional options. If all options are displayed, click on the **Less** button to hide the additional options.



Make sure to permanently store changed parameters!

Automatic time synchronization using a time server

More: Display advanced features

Less: Hide advanced features

3.3 Connecting the Camera, Power Supply

3.3.1 Notes on Cable Lengths and Power Supply

- The **power supply of the MOBOTIX camera** can only be established using the 10BaseT/NET connector of the camera with the (pre-installed) network cable. In order to supply power via the network cabling we recommend the **MOBOTIX PoE products** (MxPoE, see also section 2.11, *Camera Accessories*):
 - for one camera using the **Network Power Adapter** (MX-NPA-3-RJ)
 - for up to four cameras using the **Network Power Box** (MX-NPR-4)
 - for up to 8 or 20 cameras using the **Network Power Rack** (MX-NPR-8/20)
- The **maximum length of the network cable** for remotely supplying power is **100 m (300 ft)**.
- Make sure that you only use switches or routers that support the **10/100 Mbps Ethernet interface** of the camera. Check the LED activity of the corresponding port at the switch or router. When operating many cameras, please also see section 4.11, *Operating Many Cameras*, in the *Software Manual*, for additional hints.
- It is highly recommended to use **uninterruptible power supplies (UPS)**, which also protect the cameras and the network components against electrical surges.
- **Advantages of MOBOTIX PoE Products:**
 - Zero maintenance and reliable without fans.
 - Higher reliability of the system as a whole, since standard routers/switches without PoE can be used (lower risk of failure).
 - Easy installation in 19" racks (*MX-NPR-8/20*) or on DIN rails (*MX-NPR-4*).
- If you are using **IEEE 802.3af Power-over-Ethernet network components** for supplying power to MOBOTIX cameras, make sure that these components do not have a fan. Since the power consumption of MOBOTIX cameras is very low compared to other products, the reliability of the entire system is increased and the life cycle of these components is expanded.

Make sure to use uninterruptible power supplies (UPS)

PoE components without fans increase overall reliability of the entire system

Use the MOBOTIX MX-NPR-4 for smaller installation

Use the MOBOTIX Network Power Rack products MX-NPR-8/20 for supplying power to 8 or 20 cameras, respectively

3.3.2 Camera Startup Sequence

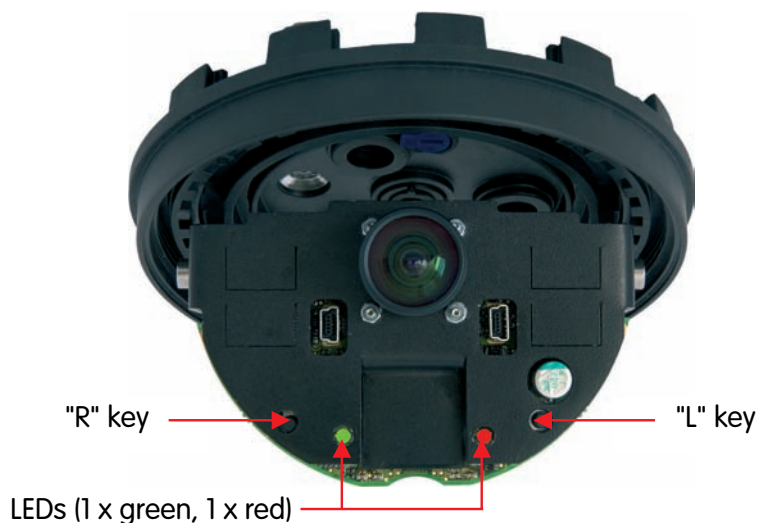
As soon as the power supply is established, the camera's LEDs will provide information on the startup sequence of the camera.

- **Bootting:** Immediately after connecting the power supply, the red LED lights up, blinks for two seconds, then stays on permanently. The camera's boot loader checks the hardware, unpacks and starts the operating system. All applications are verified using the checksums; **in case of an error**, the camera will start using the backup operating system.
- **Waiting for key pressed:** Both LEDs light up for four seconds. If you press the "R" or "L" key of the camera during this time, the camera will execute the corresponding function (see sections 3.5 and 3.6).
- **Ready:** Once the application software has been started, the green LED is on permanently and the red LED blinks. You can now reach the camera via the network using a browser. For additional information on this topic, see section 5.4.3, *LED Signals and LED Configuration*, in the *Software Manual*.



Note

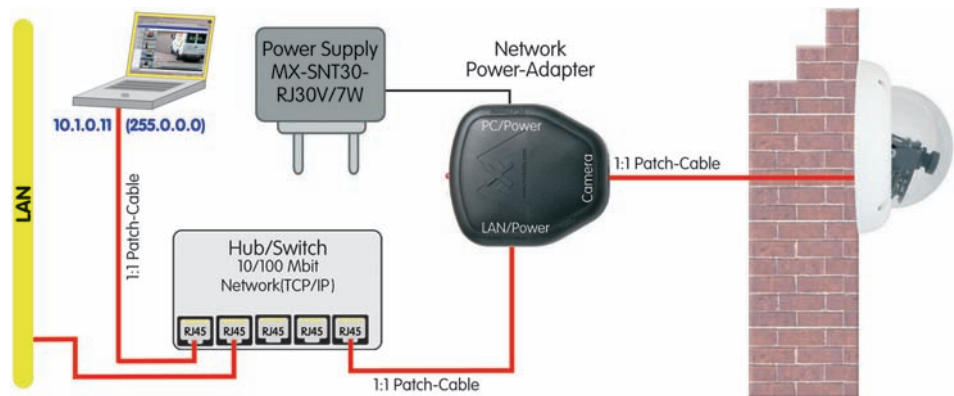
During the startup sequence of the camera, the LEDs will always light up, even if they have been deactivated in **Admin Menu > LED Setup**.



MOBOTIX power supply
and Network Power
Adapter required

3.3.3 Power Supply (MxPoE) Using a Switch

- Connect the factory pre-installed cable of the camera to the **Camera** connector of the Network Power Adapter.
- Connect the **LAN/Power** connector of the Network Power Adapter to an Ethernet connector of the switch/router or the Ethernet wall outlet.
- Plug the RJ45 connector of the external power unit into the **PC/Power** connector of the Network Power Adapter.



MOBOTIX power supply
and Network Power
Adapter required

3.3.4 Power Supply (MxPoE) When Connected Directly to a Computer

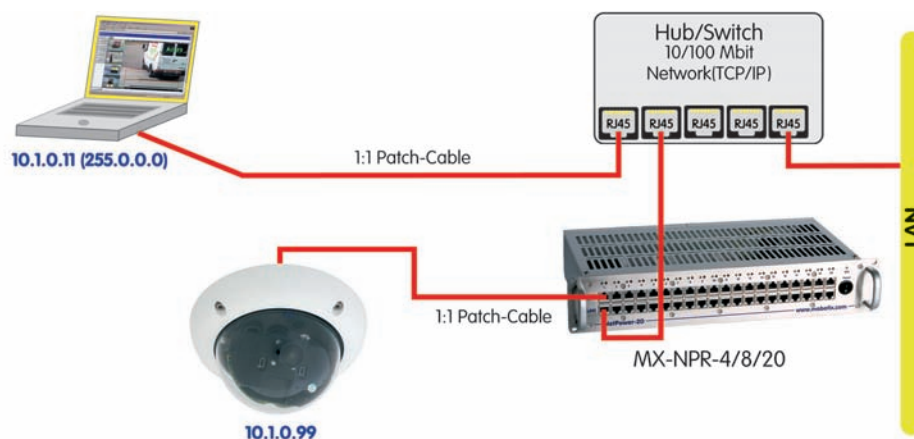
- Connect the factory pre-installed cable of the camera to the **Camera** connector of the Network Power Adapter.
- Connect the **PC/Power** connector of the Network Power Adapter to the Ethernet port of the computer.
- Plug the RJ45 connector of the external power unit into the **LAN/Power** connector of the Network Power Adapter.



The Network Power
Adapter replaces the
crossover cable when di-
rectly connecting to a
computer

3.3.5 Power Supply (MxPoE) Using a Network Power Rack or Network Power Box

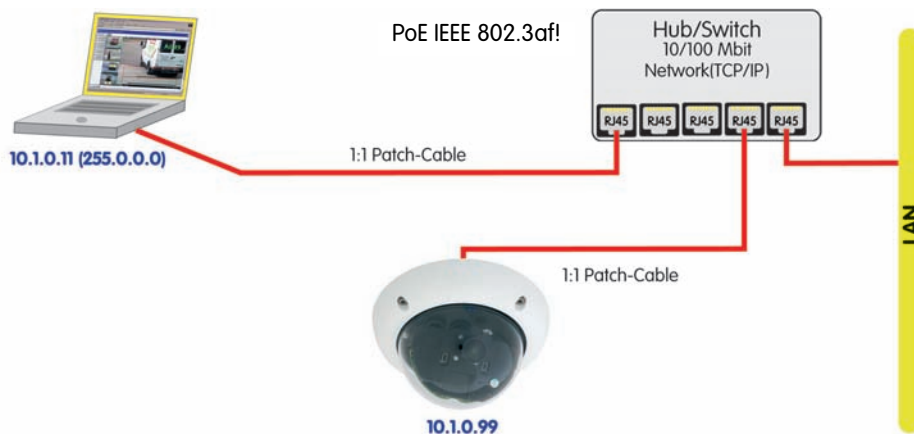
- Connect the factory pre-installed cable of the camera to the **CAM** connector of the **Network Power Rack (MX-NPR-8/20)** or the **Network Power Box (MX-NPR-4)**.
- Connect the **LAN** connector of the Network Power Rack to an Ethernet connector of the switch/router.



Do likewise to connect the camera to a **Network-Power-Box (MX-NPR-4)**.

3.3.6 Power Supply (PoE IEEE 802.3af) Using Power-over-Ethernet Products

- Connect the factory pre-installed cable of the camera to the Ethernet connector of the PoE switch/router. The switch/router needs to support the **PoE standard IEEE 802.3af**.



MOBOTIX Network Power Rack or Network Power Box required

Use the 19" MOBOTIX Netpower rack-mount units to supply power to 8 or 20 cameras

Use the MOBOTIX Network Power Box for smaller installations

Uninterruptible power supply (UPS) should be installed

PoE switch/router according to IEEE 802.3af required

Working with the web-based user interface only requires a web browser with activated JavaScript!

3.4 The First Image from the Camera

Once the Ethernet connection has been established, you have the following possibilities to see the first image of the camera:

- **Automatic camera search and configuration** using **MxControlCenter** (free Windows client for MOBOTIX cameras; section 3.4.6, *The First Image in MxControlCenter*)
- **Manual configuration** (section 3.4.1, *Preparing the Ethernet Connection*)

Besides using **MxControlCenter**, you can also use a **browser** to access the camera (section 3.4.2, *The First Image in the Browser*).

In order to finish the camera configuration, you can use either **MxControlCenter** or the browser-based user interface of the camera (see section 4.3, *The Live Screen in the Browser*, in the *Software Manual*).

3.4.1 Preparing the Ethernet Connection

For this example, we will use a camera with the factory IP address **10.1.0.99**. **Replace this IP address with the IP address of your camera.** You will find this address on a **small sticker on the camera**. Accessing the camera is always the same and is independent of the connection type: simply enter the camera's IP address in the address field of the browser (see section 3.4.2, *The First Image in the Browser*).

Note

Pressing the **"R" key** on the front of the camera will let the camera **announce its current IP address**, if an external speaker has been attached.

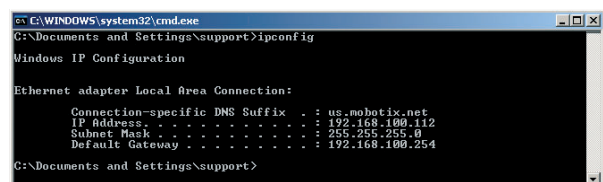
Your computer has to have a network or a wireless interface, and it should be in the same subnet as the camera. If your network also uses IP addresses of a class A network (e.g. **10.x.x.x**, network mask **255.0.0.0**), you should be able to access the camera directly (provided no other network device uses the same IP address).

Determine the IP address of your computer:

- Open a command shell (Windows) or a terminal (Linux/UNIX/OS X) and enter the following command:

Windows 2000/XP: ipconfig

Linux/UNIX/OS X: ifconfig



```

C:\WINDOWS\system32\cmd.exe
C:\Documents and Settings\support>ipconfig

Windows IP Configuration

Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix  . : us.mobotix.net
    IP Address. . . . . : 192.168.100.112
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.100.254

C:\Documents and Settings\support>

```

You will find the IP address of your Windows computer under **IP address**; for Linux/UNIX/OS X computers, search for the **inet address** parameter of the **eth0** device (the first network interface). If your computer does not use an IP address in the **10.x.x.x** range, you should change the network configuration of your computer or add a new IP address (see below).

Open a Command Prompt (Windows):
Start > Run, enter "cmd",
then press [Return]

The factory IP address is printed on the sticker on the camera

Example: 10.1.0.99

Make sure that no other network device uses the camera's IP address:

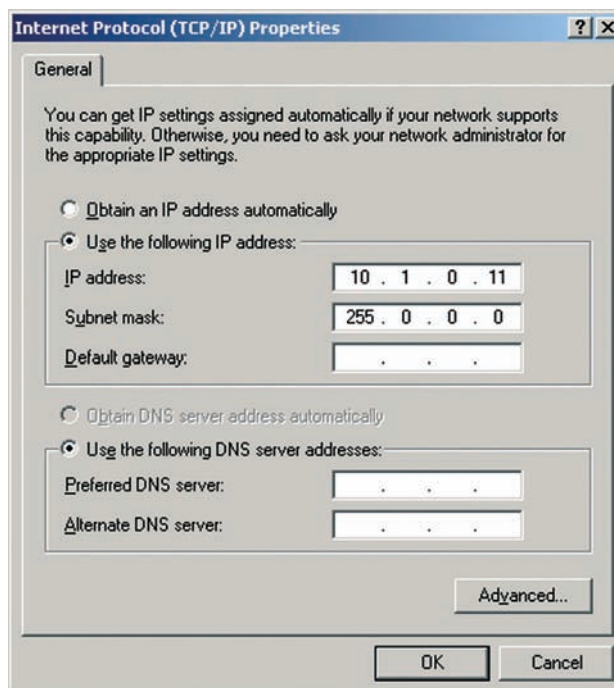
- Open a command shell (Windows) or a terminal (Linux/UNIX/OS X) and enter the following command:
ping <factory IP address>

If you receive an answer from another network device although the camera is not connected, you will have to remove that device until you have reset the MOBOTIX camera to a free IP address. We recommend using the Quick Installation wizard for assigning a new IP address to the camera.

If your computer does not use an IP address in the 10.0.0.0 network (e.g. a 192.168.x.x or 172.x.x.x network), you should temporarily set a new IP address in the 10.x.x.x range:

Windows 2000/XP

- (1) Open the **Network Connections** and open the **Properties of LAN Connection**.
- (2) Double-click **Internet Protocol (TCP/IP)**.
- (3) On the **General** tab, activate the **Use the following address** option.
- (4) Enter an IP address (e.g. **10.1.0.11**) in the class A network (**10.x.x.x**) that is unique in your network and that is not the same as the camera's IP address.
- (5) Close all dialogs by clicking on **OK**.

**Linux/UNIX/OS X**

- (1) Open a terminal as **root** user and enter the following command (**eth0** or **en0** is usually the first network interface):
Linux/UNIX: ifconfig eth0:1 10.1.0.11
OS X: ifconfig en0:1 10.1.0.11

The computer now has the additional IP address **10.1.0.11**, allowing it to access the camera with its factory IP address in the 10.x.x.x network (**10.1.0.99** in this example).

The factory IP address is printed on the sticker on the camera housing

Example: 10.1.0.99

Make sure that you use the IP address of your camera instead of 10.1.0.99!

Setting up a second IP address on Windows computers

Setting up a second IP address on Linux/UNIX and Mac OS X computers

Camera access:
http://10.1.0.99 (example)

The factory IP address is printed on the sticker on the camera

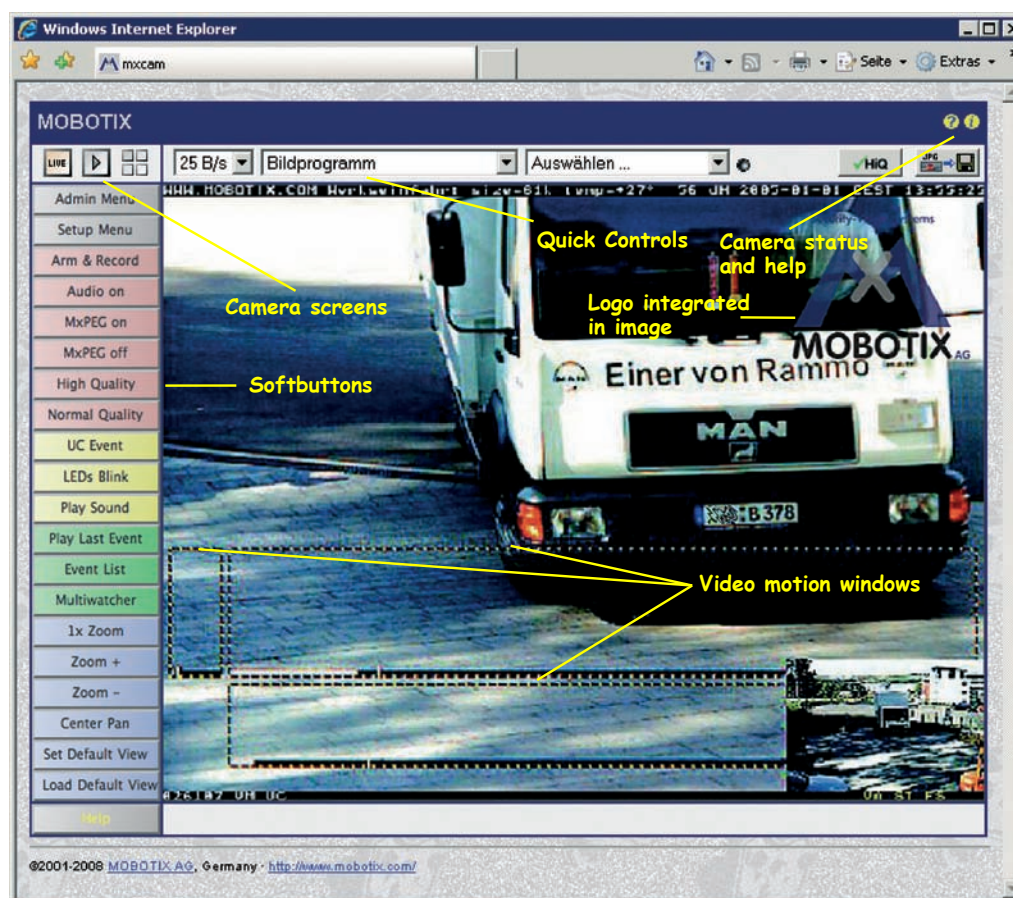
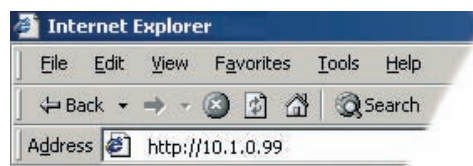
Administration menu:
User name: **admin**
Password: **meinsm**

Softbuttons can be **cus-**
tomized

Replace the example address 10.1.0.99 by the IP address of your own camera!

3.4.2 The First Image in the Browser

Now that you have successfully started the camera for the first time, you can access the camera using your preferred browser to see the live video stream and the user interface. Internet Explorer, Mozilla, Firefox, Safari, Camino or any other graphical browser with activated JavaScript is suitable. The operating system is of no importance, even PDAs can be used without any problems, provided a web browser is available on the device.




After entering the camera's IP address in the browser address bar (e.g. **http://10.1.0.99**), you will see the Live screen of the MOBOTIX camera with its user interface controls, such as **softbuttons**, buttons for the different **camera screens**, **pull-down menus** (*Quick Controls*), icons for accessing the **online help** and the **camera status**, as well as status information elements above and below the live image.


Note

Default access credentials for the Administration Menu

User name: **admin**
Password: **meinsm**

Additional Information

For more information on this topic, see the **News** and **Functional Overview** pages in the **online help** of the camera's browser interface. Click on the yellow  icon in the top right corner to open the camera's online help.

In order to obtain more information on the camera and its current configuration, open the **Camera Status** dialog by clicking on the yellow  icon in the top right corner of the camera's browser interface.


Another source of information on all dialogs and parameters of the MOBOTIX camera is the **Reference Manual** that you can download from www.mobotix.com. The Reference Manual consists of the MOBOTIX camera's online help in one PDF file.

Note

Factory default configuration: Every MOBOTIX camera has its individual factory IP address (e.g. **10.1.0.99**). This IP address is printed on a sticker on the camera. If you have started the camera using DHCP or you have set the IP address manually, enter the new IP address in the browser address bar (e.g. **192.168.0.99**) instead of the factory IP address. To have the camera announce its current IP address over the speaker, simply press the **key marked "R"** on the camera housing. For additional information on this topic, see section 3.5, *Starting the Camera With an Automatic IP Address (DHCP)*.

MxControlCenter: In order to see the live image of the camera, you can also use other applications or the integrated programming interface of the MOBOTIX camera. **MxControlCenter** for Windows is such an application and is provided **free of charge** by MOBOTIX. Besides its ability to display fast live video of up to **30 cameras simultaneously at 30 fps each** on one computer, MxControlCenter also allows recording and playing back video clips with lip-synchronous audio via the network and can control pan/tilt heads using a joystick or the mouse. Download the newest version of MxControlCenter from the MOBOTIX website. The website contains more information on MOBOTIX systems as well as the MxControlCenter User Manual.

 Camera Help

 Camera status

Changing the factory IP address: Always use Admin Menu > Quick Installation

Not available on Basic models, on D22M IT/Secure models only with external speaker!

**All camera windows:**

Click on to open the online help pages for the camera screens

Live screen:

<http://<camera IP>/control/userimage.html>

Playback screen:

<http://<camera IP>/control/player>

Multiview screen:

<http://<camera IP>/control/multiview>

Multiwatcher screen:

<http://<camera IP>/control/multiwatcherproxy>

PDA screen:

<http://<camera IP>/pda>

PDA Event List:

<http://<camera IP>/control/player?eventlist&pda>

Guest screen:

<http://<camera IP>/cgi-bin/guestimage.html>

Use the Administration menu to set the camera screen that should appear initially when accessing the camera IP address

3.4.3 Camera Screens in the Browser

Per factory default, the MOBOTIX camera first shows the **Live** screen. You can set a different start page in order to prevent others from changing the settings. In addition to this, you can assign user names and passwords to prevent unauthorized access or you can restrict access to the current live image only by setting the **Guest** screen as the start page.

The following screens are available:

- Live** screen: Shows the current live image and allows changing the image and event settings of the camera. This is the factory default start page of the camera.
- Playback** screen: Shows all recorded images or video clips with extended functions for searching and downloading images, regardless of where the images are stored (internal camera storage, external ring file server/computer, Flash device).
- MultiView** screen: Shows multiple cameras or the last events in a freely definable layout.
- Multiwatcher** screen: Shows a user-friendly and customizable screen for monitoring several cameras via Internet, while using very little transmission bandwidth.
- PDA** screen and **PDA Event List**: Both screens are optimized for PDAs with a focus on fast data transmission with low bandwidth requirements (GSM, GPRS) on devices with small displays (PDAs, mobile phones, sub notebooks). The **PDA Event List** in particular gives a quick overview over the last events since the live image is not transferred.
- Guest** screen: Only shows the current live image with reduced frame rate. One important application of this screen is to make the live image available for specific users without giving them the opportunity to change the configuration or the image settings of the camera.

Note

Open **Admin Menu > Language and Entry Page** to set a different start page when accessing the camera.

Open **Admin Menu > Users and Passwords** and **Admin Menu > Group Access Control Lists** to set user rights and to prevent unauthorized access to specific screens and functions of the camera (see section 5.4.1, *Passwords*, in the *Software Manual*).

[illegible]

Automatic network configuration for MOBOTIX cameras using Zeroconf/Bonjour

MOBOTIX cameras support Bonjour by default from software version 3.0.3.37!

3.4.4 Access Using Zeroconf/Bonjour

Zeroconf (short for *Zero Configuration Networking*) describes the networking method of automatically establishing an IP-based network without the help of servers and without changing any settings. Zeroconf-capable devices automatically announce their name and the service they are providing (printer, email server, etc.) in the network. As a basic technology, Zeroconf is part of the current Windows, Linux and Mac OS X operating systems.

Bonjour is the implementation of this service in Apple Mac OS X from version 10.4; in Mac OS X 10.2 and 10.3, this service is called **Rendezvous**.

Bonjour is available free of charge for **Windows** computers from the Apple web site www.apple.com/bonjour. For **Linux** and **UNIX**, **Avahi** provides the corresponding functionality. For further information on Bonjour and Zeroconf, please consult www.apple.com/macosx/features/bonjour and the Zeroconf web site www.zeroconf.org.



Apple Bonjour

From software version **3.0.3.37**, MOBOTIX cameras automatically offer their web service via Zeroconf/Bonjour. This means that the cameras will announce themselves automatically in a Bonjour list in the web browser and in MxControlCenter. Selecting a MOBOTIX camera in the browser will display the camera's user interface in the browser window; likewise, MxControlCenter will be able to find the camera.

Note

A major **advantage of Zeroconf/Bonjour** is that **you do not need to know the IP address or the name of the MOBOTIX camera in order to access it**.

Another advantage of Bonjour is that **all cameras will be found regardless if they are in the same subnet or in other subnets** {as long as they are in the same physical network as the computer}.

Caution

When using the camera in a network with managed switches or internal firewalls, make sure that port **5353** is not blocked or else Zeroconf/Bonjour will not work.

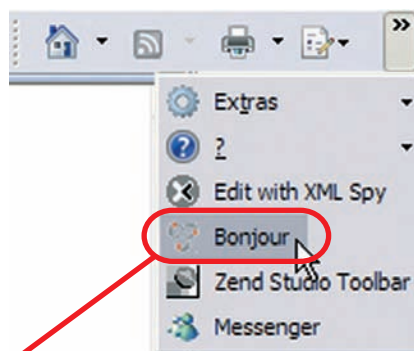
Prerequisites for Using Zeroconf/Bonjour

MOBOTIX camera:

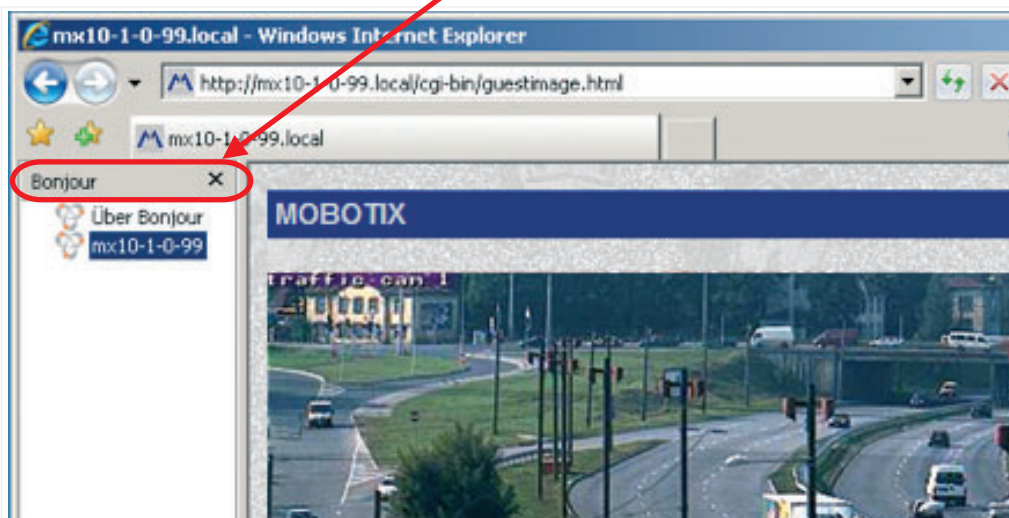
- **Zeroconf** has to be activated (**Admin Menu > Ethernet Interface**). This is the **factory default** for MOBOTIX cameras from software version 3.0.3.37.
- The camera needs to be in the same **physical** subnet as the computer (**Admin Menu > Ethernet Interface**).

Operating system:

- **Microsoft Windows (2000, XP, 2003, Vista):** Bonjour for Windows has to be installed (www.apple.com/bonjour). The application also configures the Windows firewall, installs an add-on for Internet Explorer and the Java Bonjour libraries. The list of Bonjour-enabled network devices is shown in Internet Explorer once the **Bonjour** add-on has been activated in the main toolbar of Internet Explorer.



When using Microsoft Windows, install Apple Bonjour for Windows and activate the Bonjour add-on in Internet Explorer



Internet Explorer with activated Bonjour sidebar

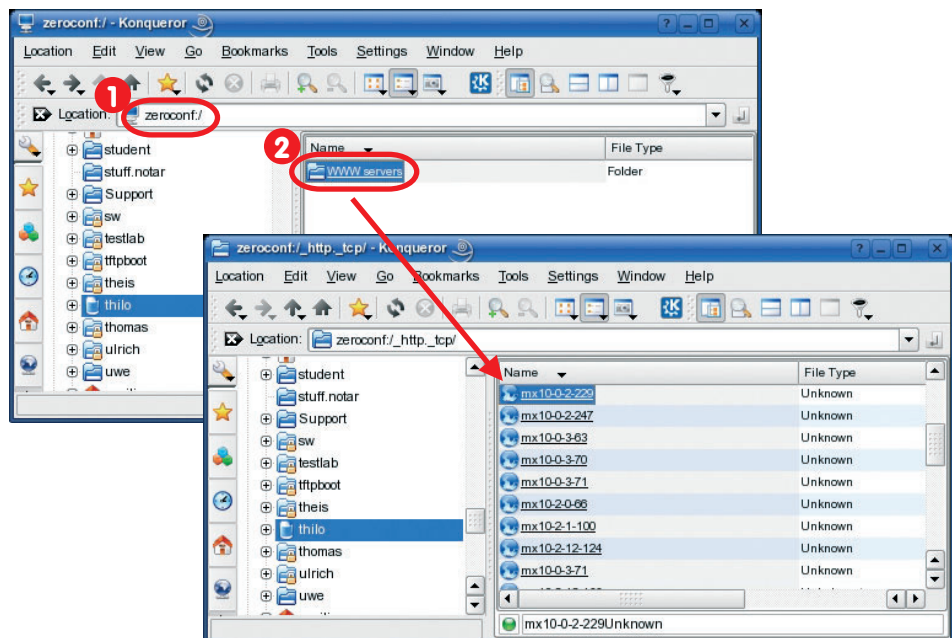
Bonjour is enabled by default in the Safari and Camino browsers on Mac OS X

- **Macintosh OS X (10.2 or higher):** Bonjour is included in the Apple operating system. There is no other configuration required. The list of Bonjour-enabled network devices is displayed in Safari after clicking on the **Bonjour** button.



- **Linux:** Zeroconf is included in KDE from version 3.4 and in Gnome from version 2.8. The list of Bonjour-enabled network devices is displayed after entering **zeroconf:/** in the Konqueror address bar. The displayed list contains all Zeroconf-enabled network services (see figure below). Clicking on **/www servers** displays the list of all available MOBOTIX cameras (and all other Bonjour-enabled devices). Linux users can also use the **mdns-scan** application in a terminal to search for Bonjour-enabled devices on the network.

Konqueror on SuSE



Note

If a **proxy server** is used in your network, you may get an error message when trying to access a MOBOTIX camera in the web browser. Make sure that the list of proxy exceptions in your browser contains the following entry:

- * **.local** (Windows)
- * **.local.** (Mac OS X)
- .local.** (Linux)

To find the **proxy exceptions** in **Internet Explorer** for **Windows**, open **Tools > Connections > LAN Settings > Settings > Proxy server > Advanced** and add the entry in the **Exceptions** text field.

To find the **proxy exceptions** in **Mac OS X**, open **System Preferences > Network > Proxies** and add the entry in the **Bypass proxy settings for these Hosts and Domains** text field.

As an alternative, your network administrator can reconfigure the proxy server so that it does not block **.local** addresses.

Bonjour for Windows automatically configures the proxy exceptions in the Windows firewall upon installation.

Caution: **Proxy servers** may cause errors when trying to establish a connection

3.4.5 Browser Settings

Current browsers with activated **JavaScript** (Internet Explorer, Netscape, Mozilla, Firefox, Safari, Konqueror, Opera, Camino, etc.) can show the camera's live images without changing the default settings. Text-based browsers (e.g. Lynx) cannot display the user interface and are *not* suitable for operating the camera. A restrictive configuration of a browser or operating system, however, will prevent certain camera features from working properly and may even make working with the camera impossible. This can also be caused by the selected security or browser cache settings or if proxy servers are used.

You may experience problems in the following areas:

- **Popup Blocker:** **Popups** are windows that display (mostly unwanted) windows without user interaction (in this case, the web server of the MOBOTIX camera creates these windows). While active popup blockers make sense when surfing websites on the Internet, they may prevent individual windows from being displayed when used together with a MOBOTIX camera. The MOBOTIX camera creates individual popup windows in order to display detailed information (e.g. the *Network Test Log* window, see section 5.3, *Connection Test*, in the *Software Manual*). Since popup blockers are available not only in browsers but in plug-ins as well (e.g. in the Google toolbar), you need to take care that this issue is resolved properly.

To circumvent this problem, you can either deactivate popup blockers in general or you can enter the respective camera IP addresses or address ranges in the **exception lists** of the popup blocker or browser (recommended).

- **Browser Cache:** Browsers store viewed pages locally in the **cache** of your computer. This minimizes the transfer time and reduces bandwidth. There is, however, a chance that you may see outdated information. When updating the camera software, this can cause negative side effects.

To avoid this, it is recommended that you configure your browser cache so that the cache contents are **automatically** compared to the contents of the website every time you access a website. While the software is updated, it is recommended that you either deactivate the cache or set it to its minimum size.

- **Proxy Server:** Similar to browser caches, **proxy servers** (predominantly used in larger networks) are used to temporarily store website files so that these files can be sent to a browser without having to download them again. When updating the camera software, for example, proxy servers can block the entire process or parts of it.

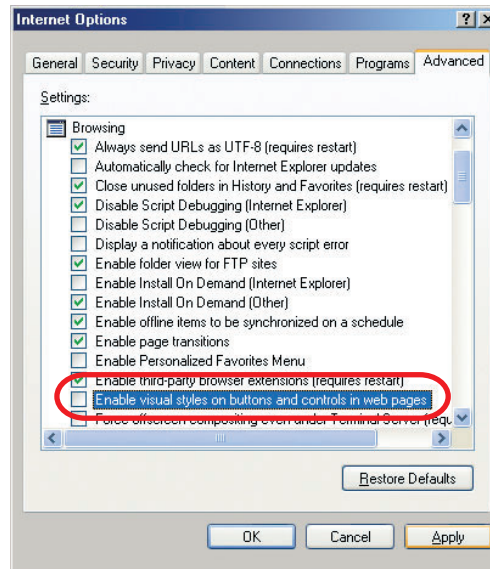
If a proxy server is used in your local network, it is strongly recommended that you enter the cameras' IP addresses (or a corresponding camera subnet) as **proxy exceptions** (see chapter 6, *Software Updates*, in the *Software Manual*).

Deactivate popup blockers!

Set the browser cache to automatic updating!

Add the camera to the proxy exceptions!

- **Security Settings:** Restrictive browser **security settings** may complicate or even prevent using the browser-based user interface of the MOBOTIX camera. Make sure that **JavaScript** or **Active Scripting** (whichever is appropriate) are activated. It is recommended to add the camera IP addresses to the list of trusted sites. This is especially important if you intend to install the MxPEG ActiveX plug-in of older camera software versions for fast video and audio streaming (see section 4.3.5, *Browser Settings, ActiveX-Plug-in*, in the *Software Manual*).
- **Colored Buttons:** Internet Explorer version 6 or higher (on computers running Windows XP or higher) will not display colored **buttons on the browser-based user interface**. These versions of Internet Explorer always use the color settings of the operating system for the browser buttons. In order to display colored buttons, you can deactivate the visual styles in the extended **Internet options** of Internet Explorer.



Activate JavaScript/ActiveScripting!

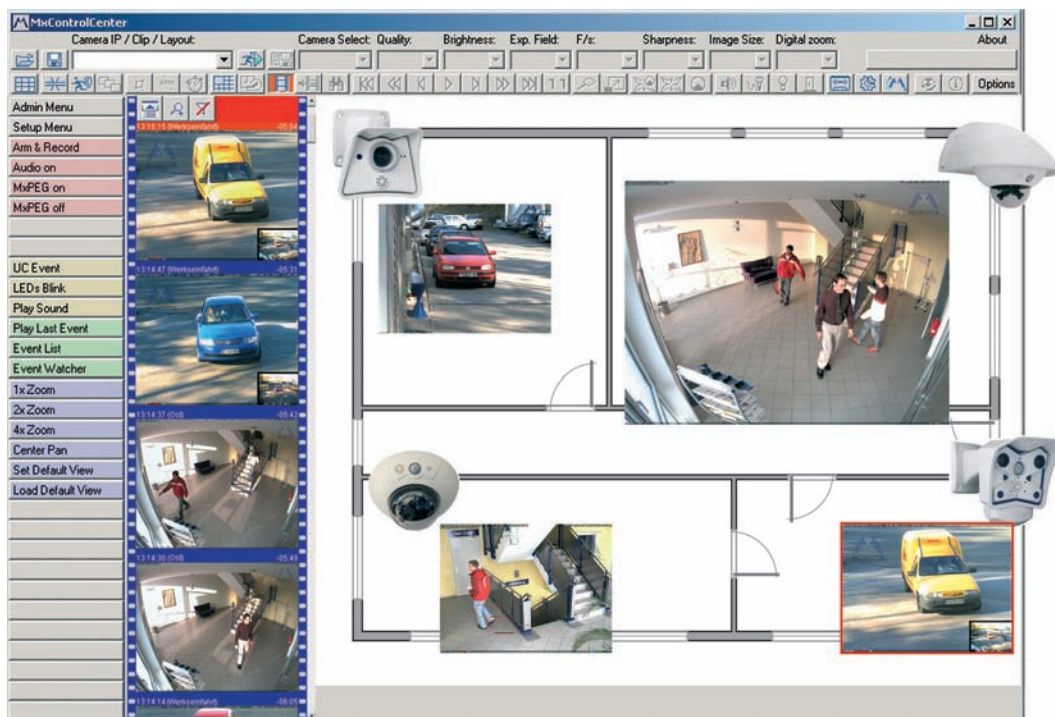
Activating the colored softbuttons in Internet Explorer

Download MxControlCenter free of charge from www.mobotix.com

MxControlCenter Windows client with alarm list, background image and freely positioned cameras

3.4.6 The First Image in MxControlCenter

MOBOTIX MxControlCenter is a free-of-charge application, which provides a means for displaying and managing **many MOBOTIX cameras** and their alarms on one computer. On top of this, MxControlCenter can **simultaneously display 30 MOBOTIX cameras with 30 frames per second in CIF format and MxPEG encoding** on a standard Pentium 4 computer with 3 GHz.



MxControlCenter can do quite a bit more than simply display the video and audio data from MOBOTIX cameras. The unique features of MxControlCenter in combination with the MOBOTIX cameras create a full-featured security system: intelligent alarm handling, various ways of arranging the camera views on different layouts (MultiView screens), ability to display cameras that are sending alarm notifications, the integrated camera management functions, and an array of other interesting features.

Further Information on MxControlCenter

For further information on **MxControlCenter**, download the *MxControlCenter User Manual* from www.mobotix.com (**Support > Manuals** section).

Further Information in the Software Manual

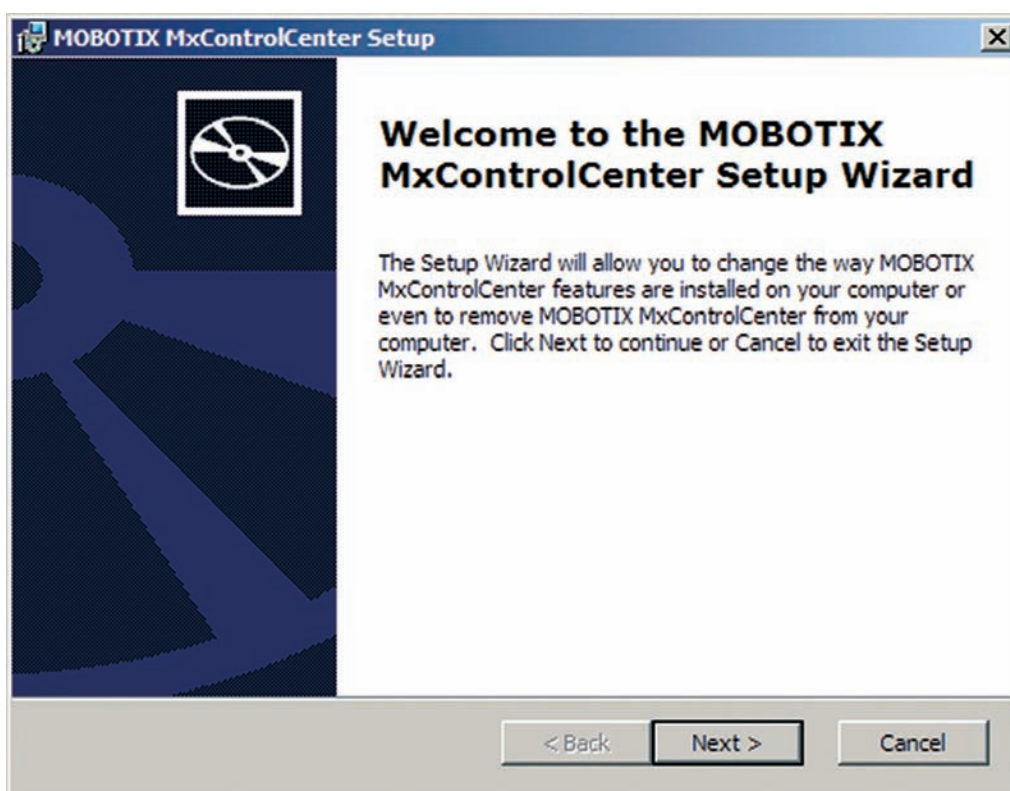
- MxPEG with audio and M-JPEG (sections 5.5.6 and 5.5.7)
- Fast video streaming (section 4.10)

Installing MxControlCenter

If you have an **MxControlCenter installation CD**, insert it into your computer drive.

If this is not the case or if you would like to update an older version, you can download the latest **MSI** or **ZIP** file from the MOBOTIX website. The latest version is available at www.mobotix.com > **Support** > **Software Downloads** in the **MxControlCenter** section.

If you are using the installation CD, the installation process starts automatically and leads you through the necessary steps. If you have downloaded the Installer, simply double-click the **MSI** file to start the installation process.



Automatic installation of MxControlCenter with Windows Installer (MSI)

The installer automatically creates shortcuts for the most important applications on your desktop.

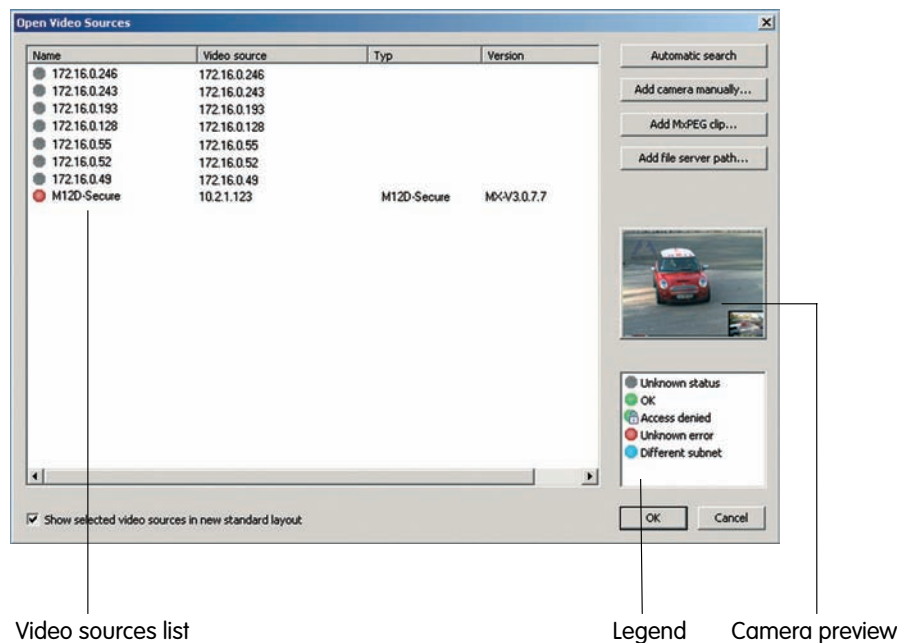
Using MxControlCenter for the First Time

Double-click the shortcut created by the installer (see *Installing MxControlCenter*) or the program file itself to start MxControlCenter.

Automated Search for MOBOTIX Cameras

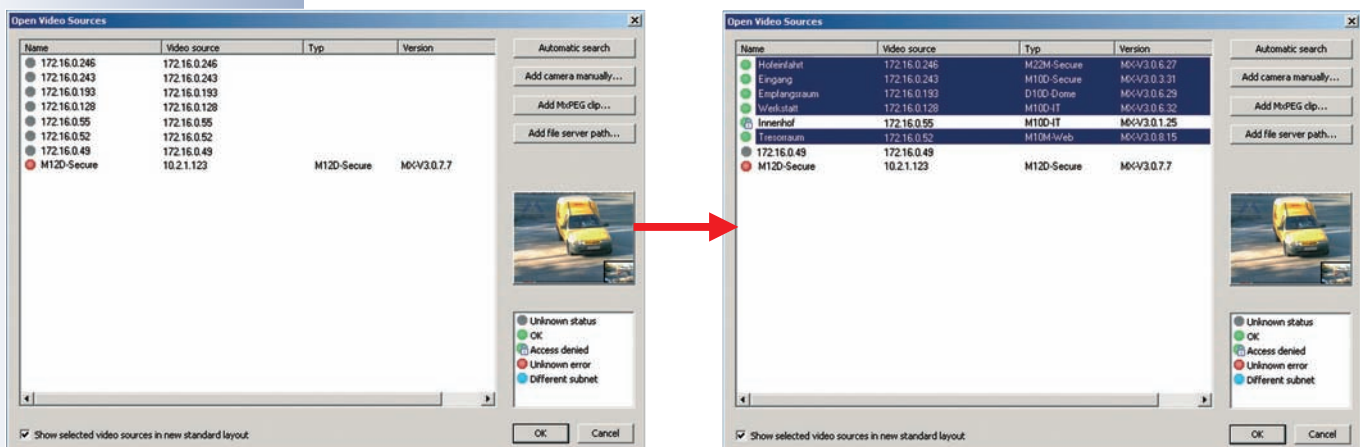
If you start MxControlCenter for the first time or if you have not yet stored a start layout with the desired video sources (i.e. MOBOTIX cameras), the **Open Video Sources** dialog will open and automatically starts scanning the network.

Automatic search for MOBOTIX cameras!

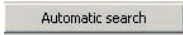



After all MOBOTIX cameras have been identified, MxControlCenter performs an operational test on the cameras to determine their status and then lists them according to the legend.

Next, MxControlCenter automatically selects all cameras.




Click on **OK** to add the selected cameras to the **Open Video Sources** dialog.

Anytime you connect a new camera to the local network, you can initiate the search in the **Open Video Sources** dialog again by pushing the  button.

If the desired MOBOTIX cameras are shown as *OK* in the video source list (status  *OK*), proceed to the *Selecting Video Sources* section further below.

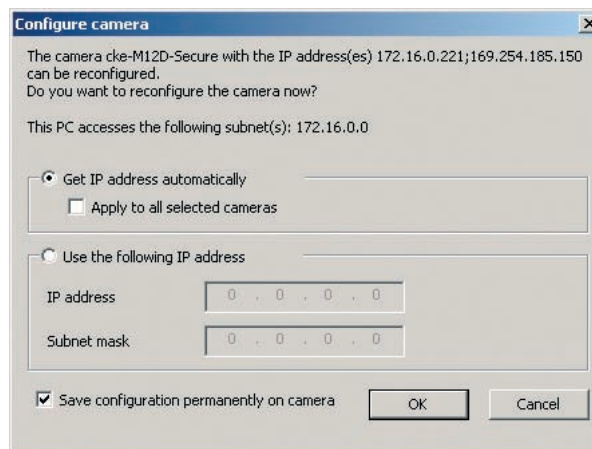
Configuring MOBOTIX Cameras for a Different Network

Using Bonjour, MxControlCenter finds not only cameras on the same subnet (network range) but also **MOBOTIX cameras located in other subnets** (status  *Different subnet*). In such a case, you would not be able to establish any connection to cameras in a different network or subnet (without going into much further detail about the complicated details of TCP/IP network configurations). This is possible, for example, when a camera with a factory IP address is connected to a network in which a DHCP server automatically assigns the IP addresses.

Right-click on a camera, then click on *Configure network* in the context menu and **MxControlCenter will automatically reconfigure this camera** so that it is “integrated” into your existing subnet. However, MxControlCenter first needs some information about the subnet into which the camera will be integrated. You can enter this information in the **Configure Cameras** dialog that opens automatically.

If your computer gets its IP address automatically from a DHCP server, then this is certainly the best choice for the new camera and most likely for all other cameras which have been found in a different subnet (**Apply to all selected cameras** checkbox).

If you have assigned a fixed IP address to your computer, you will certainly prefer to assign fixed IP addresses (issued by your system administrator) to every camera. In most cases, you should enter a similar configuration as the one found for your computer's **Network Connections** in the **Properties of Internet protocol (TCP/IP)** dialog.



Automatic camera configuration by MxControlCenter

MxControlCenter changes the network configuration of the current camera and, after a short time, the camera also appears in the list with a new IP address and in the same subnet as your computer.

Make sure that the **Save camera configuration permanently** checkbox is activated so that the new network settings will be used from now on and not just until the camera's next reboot.

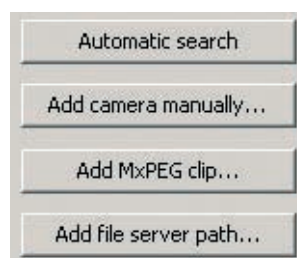
Note

If you have set a different user name and password for administration than the factory-preset ones (**admin**, **mein-sm**), you will need to have these user credentials available and enter them in the appropriate dialog. To open the dialog, click on the *Enter password* context menu entry.

Defining Additional Video Sources

Besides automatically detecting MOBOTIX cameras, you can also **manually add other video sources** to the list of available video sources in MxControlCenter.

- **Automatic search:** Scans the (physical) network. This scan will find all MOBOTIX cameras, regardless of whether they are in the same subnet as the computer or in a different one.
- **Add camera manually:** Enter a known IP address or the DNS name of a MOBOTIX camera if this camera had not been detected during the automatic search in the first place.
- **Add MxPEG clip:** Adds an MxPEG video clip previously recorded by a MOBOTIX camera as a video source.
- **Add file server path:** Adds the alarm images previously stored by a MOBOTIX camera on an external file server as a video source.

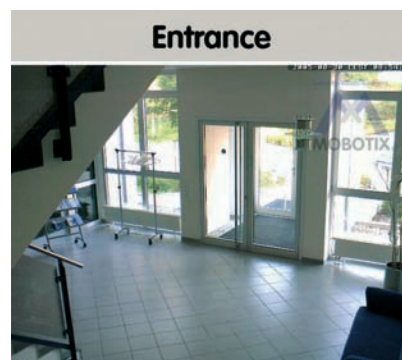


Selecting Video Sources

Highlight the desired video sources you would like to manage and display in MxControlCenter.

Camera Preview

If you select a camera with a status of *OK*, MxControlCenter **automatically displays the live images from the camera in the preview window**. If you are using [Ctrl]-click to select several cameras, the image from the camera selected last is shown in the preview window. This feature facilitates identifying the cameras you would like to use.



Editing the Video Source List

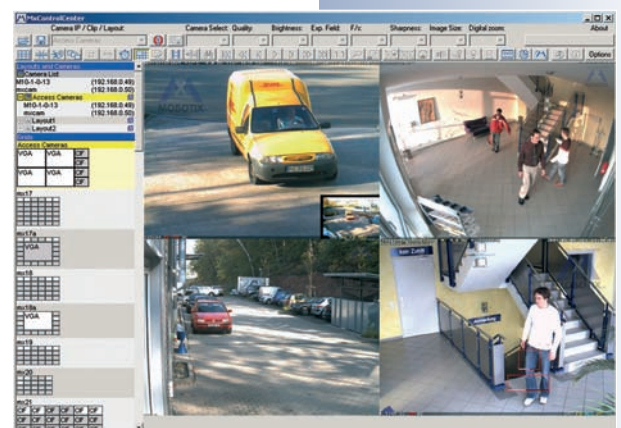
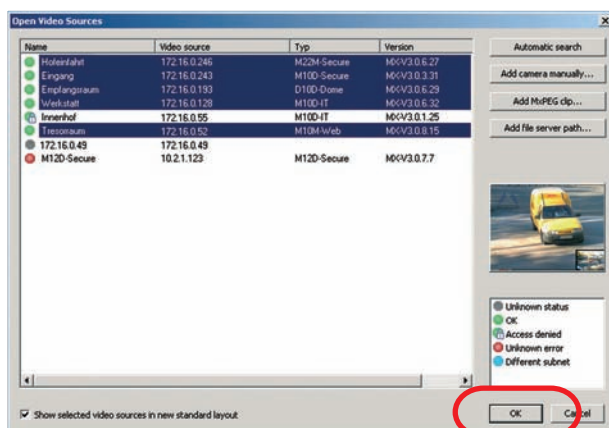
This list provides a popup menu (right mouse key), allowing you to select/deselect all video sources at once. Similarly, you can highlight some or all of the listed video sources and remove them from the list if they are not to be displayed or managed in MxControlCenter.

Select all
Deselect all
Remove
Remove all
Configure network...
Enter password...

If you interrupt the discovery process (section *Configuring MOBOTIX Cameras for a Different Subnet*) or require a password that is different from the factory preset one, you can always relaunch the configuration process from the popup menu at a later time and enter the appropriate user name and password.

Using the Selected Video Sources

Clicking on **OK** instructs MxControlCenter to use the highlighted cameras. Activate the **Show selected video sources in new standard layout** checkbox and MxControlCenter automatically generates a layout with the live images of all highlighted cameras.



Connect and activate the external speaker of the camera!

The D22M also allows connecting an external speaker and microphone. The D22M does not have a built-in speaker or microphone.

Announce IP address:
Press "R" key

In case of an error, the camera uses its last IP address

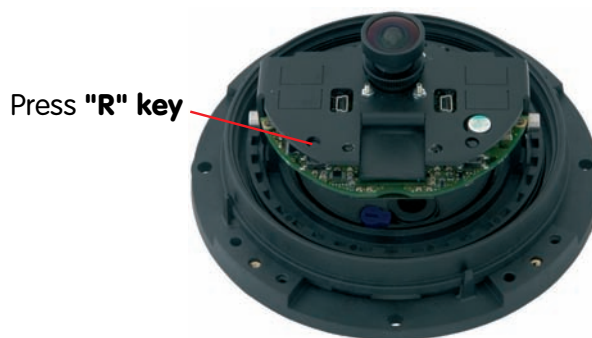
3.5 Starting the Camera With an Automatic IP Address (DHCP)

If your network has a DHCP server, you can start the camera with DHCP support. In this case, the DHCP server automatically assigns an IP address.

As soon as startup has been completed, the camera automatically announces its IP address, its network mask and its MAC address (note that this feature requires an external speaker). Note that this announcement function can be deactivated (**Admin Menu > Loudspeaker and Microphone**).

Proceed as follows to start the camera using DHCP:

- If the camera is powered on, disconnect the power supply of the camera by unplugging the corresponding cable.
- Reconnect power to the camera and observe the LEDs.
- Wait until **both LEDs are lighting up simultaneously for the first time**.
- Press the **"R" key** on the camera **within four seconds**.



- After about two more seconds, the camera plays a sound twice ("Boing, Boing"), if an external speaker has been connected.
- After about another 15 seconds, the camera will announce its network data, provided it has audio functionality.

You can now access the camera using the IP address it just announced and via the list of Bonjour-enabled devices.

Note

If you would like to have a running camera repeat its network settings, simply press the **"R" key** once. For D22M models, make sure that an external speaker has been connected to hear the announcement.

Caution

When starting the camera with DHCP support, make sure that the network has a **properly functioning DHCP server**. If this is not the case, the camera cannot obtain a valid IP address and will fall back to its last known IP address.

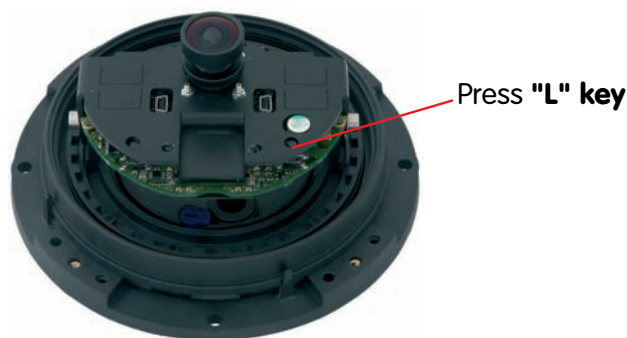
You should also make sure that the DHCP server **always assigns the same IP addresses to the cameras** by reserving the desired IP address for the MAC address of every camera.

3.6 Starting the Camera Using the Factory IP Address

In certain situations, it may become necessary to start the camera with its factory IP address. This could be the case, for example, if the IP address has been lost or the camera does not react to the last known IP address.

Proceed as follows to start the camera using its factory IP address:

- If the camera is powered on, disconnect the power supply of the camera by unplugging the corresponding cable.
- Reconnect power to the camera and observe the LEDs.
- Wait until **both LEDs are lighting up simultaneously for the first time**.
- Press the **"L" key** on the camera **within four seconds**.



- After about two more seconds, the camera plays a single sound ("Boing"), if an external speaker has been connected.

The camera is now accessible again using its factory IP address (see label on the camera housing).

Note

If you use the camera's **"L" key** to load the factory network configuration, this configuration is not automatically saved to flash memory. Upon restarting the camera the next time **without** using the camera's **"L" key**, the *last stored network configuration* will be used. To permanently store the new network configuration in the camera's flash memory, open **Admin Menu > Store ...**

Caution

As opposed to resetting the camera using *Admin Menu > Reset configuration to factory defaults*, the user information will not be reset if the camera is booted using the factory IP address.

Passwords and camera settings will not be changed!

The D22M also allows connecting an external speaker and microphone. The D22M does not have a built-in speaker or microphone.

Make sure you store the factory network configuration to the permanent flash memory

Users and passwords will **not** be changed!

Declaration of Conformity

**Konformitätserklärung gemäß dem Gesetz über Funkanlagen und
Telekommunikationsendeinrichtungen (FTEG) und der Richtlinie 1999/5/EG (R&TTE)**
**Declaration of Conformity in accordance with the Radio and Telecommunications Terminal Equipment Act
(FTEG) and Directive 1999/5/EC (R&TTE Directive)**
**Déclaration de conformité selon la loi sur les équipements hertziens et les équipements terminaux de télécommunication
(FTEG) et la directive 1995/5/EC (R&TTE)**

Hersteller/verantwortliche Person: MOBOTIX AG
 Manufacturer/responsible person:
 Fabricant/personne responsable :

erklärt, dass das Produkt: Netzwerk-Kamera
 declares that the product: Network camera
 déclare que le produit : Caméra de réseau

Typ: D22M
 Type:
 Type :

Telekommunikations(Tk-)endeinrichtung: Netzwerk-Kamera
 Telecommunications terminal equipment: Network camera
 Equipement de terminal de télécommunication: Caméra de réseau

Verwendungszweck: Übertragung von Bildern und Toninformationen
 Intended purpose: Transmission of images and audio information
 Le but suivi : Transmission d'images et du son

bei bestimmungsgemäßer Verwendung den grundlegenden Anforderungen des § 3 und den übrigen einschlägigen Bestimmungen
 des FTEG (Artikel 3 der R&TTE) entspricht.
 complies with the essential requirements of §3 and the other relevant provisions of the FTEG (article 3 of the R&TTE Directive), when used for its
 intended purpose.
 est conforme aux exigences fondamentales du paragraphe 3 du FTEG (article 3 du R&TTE) et des autres clauses s'y rapportant.

Gesundheit und Sicherheit gemäß § 3 (1) 1. (Artikel 3 (1) a))
 Health and safety requirements pursuant to § 3 (1) 1. (article 3 (1) a))
 Santé et sécurité conformes au paragraphe 3 (1) 1. (article 3 (1) a))

angewendete harmonisierte Normen: EN 60950:2000 (NSR 73/23/EWG & 93/68/EWG)
 harmonised standards applied: (LVD 73/23/EWG & 93/68/EC)
 normes harmonisées : (Directive Basse Tension 73/23/EWG & 93/68/EC)

Schutzanforderungen in Bezug auf die elektromagn. Verträglichkeit § 3 (1) 2, Artikel 3 (1) b))
 Protection requirements concerning electromagnetic compatibility § 3 (1) 2, (article 3 (1) b))
 Exigences de protection concernant la compatibilité électromagnétique, paragraphe 3 (1) 2; (article 3 (1) b))

angewendete harmonisierte Normen: EN 61000-4-2 EN 50121-4:2007 (EMV-RL 1995/5/EG (R&TTE))
 harmonised standards applied: EN 61000-4-3 EN 55022:2006 (EMCD 1995/5/EG (R&TTE))
 normes harmonisées : EN 61000-4-4 EN 55024:1998+ (Directive EMC 1995/5/EG (R&TTE))
 EN 61000-4-5 A1:2001+A2:2003
 EN 61000-4-6 EN 61000-6-2:2005

weitere angewendete Normen: EN 55022:2006 CFR 47, FCC Part 15B
 other harmonised standards applied: AS/NZS 3548 CISPR 22:2005 (mod.)
 autres normes harmonisées :

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 E-Mail: info@mobotix.com



Kaiserslautern, 28.05.2008

Ort, Datum
 Place & date of issue
 Lieu et date

Dr. Ralf Hinkel
 Vorstand/CEO, MOBOTIX AG

Name und Unterschrift
 Name and signature
 Nom et signature

[illegible]

MOBOTIX – The HiRes Video Company



**To demonstrate our confidence in the quality of our products,
MOBOTIX cameras were used to capture all the images that
appear in this manual.**

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Executive Board

Dr. Ralf Hinkel

Registration Office: Kaiserslautern Local Court

Registration Number: HRB 3724

Tax Code: 44/676/0700/4

Tax Office: Worms-Kirchheimbolanden, Germany

VAT ID:

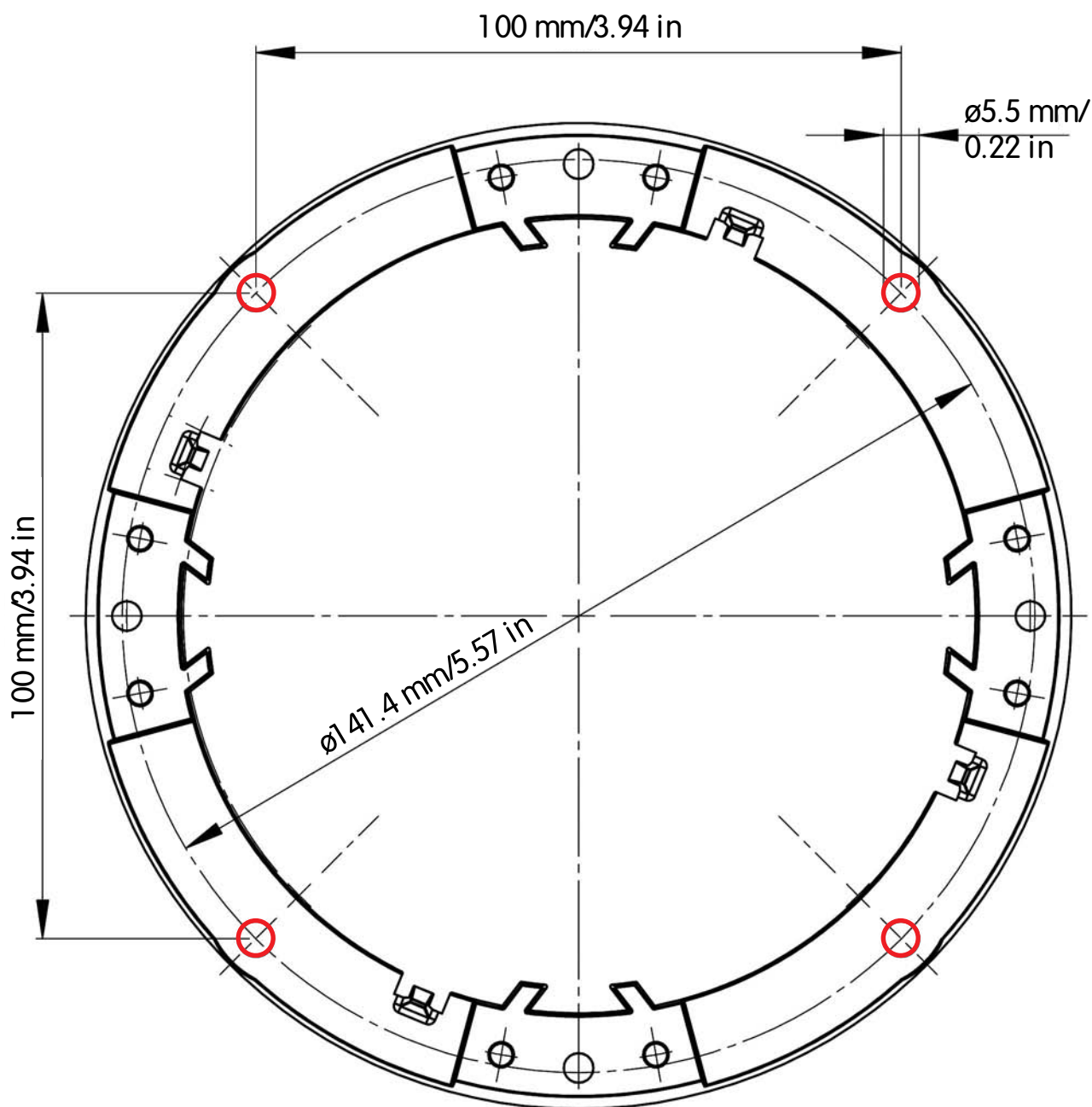
DE202203501

You can find the latest version of this document
at www.mobotix.com under **Support**.



Technical specifications subject to change without notice!

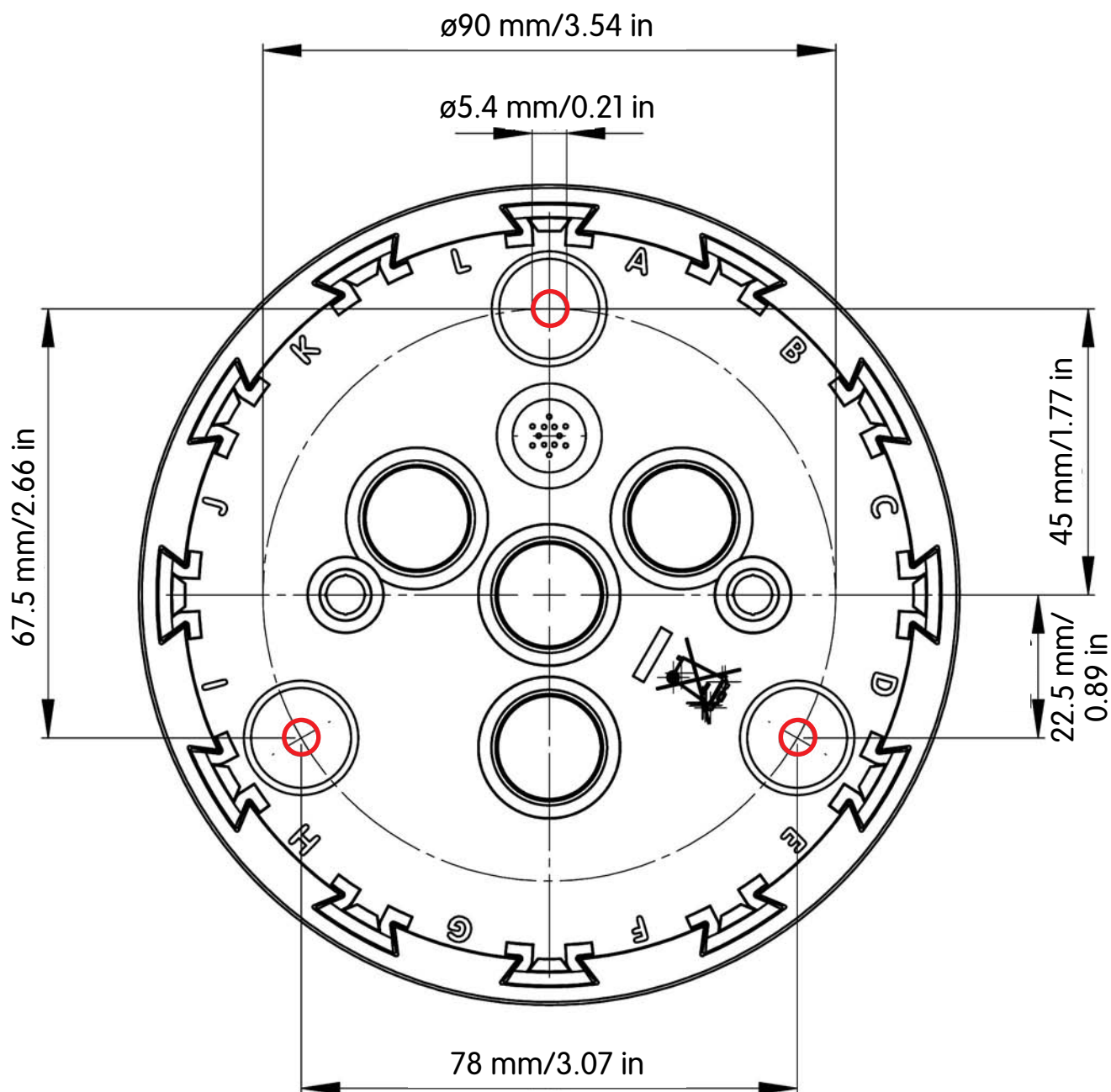
Scale 1:1



D22M-BASIC: Drilling Template

Scale 1:1

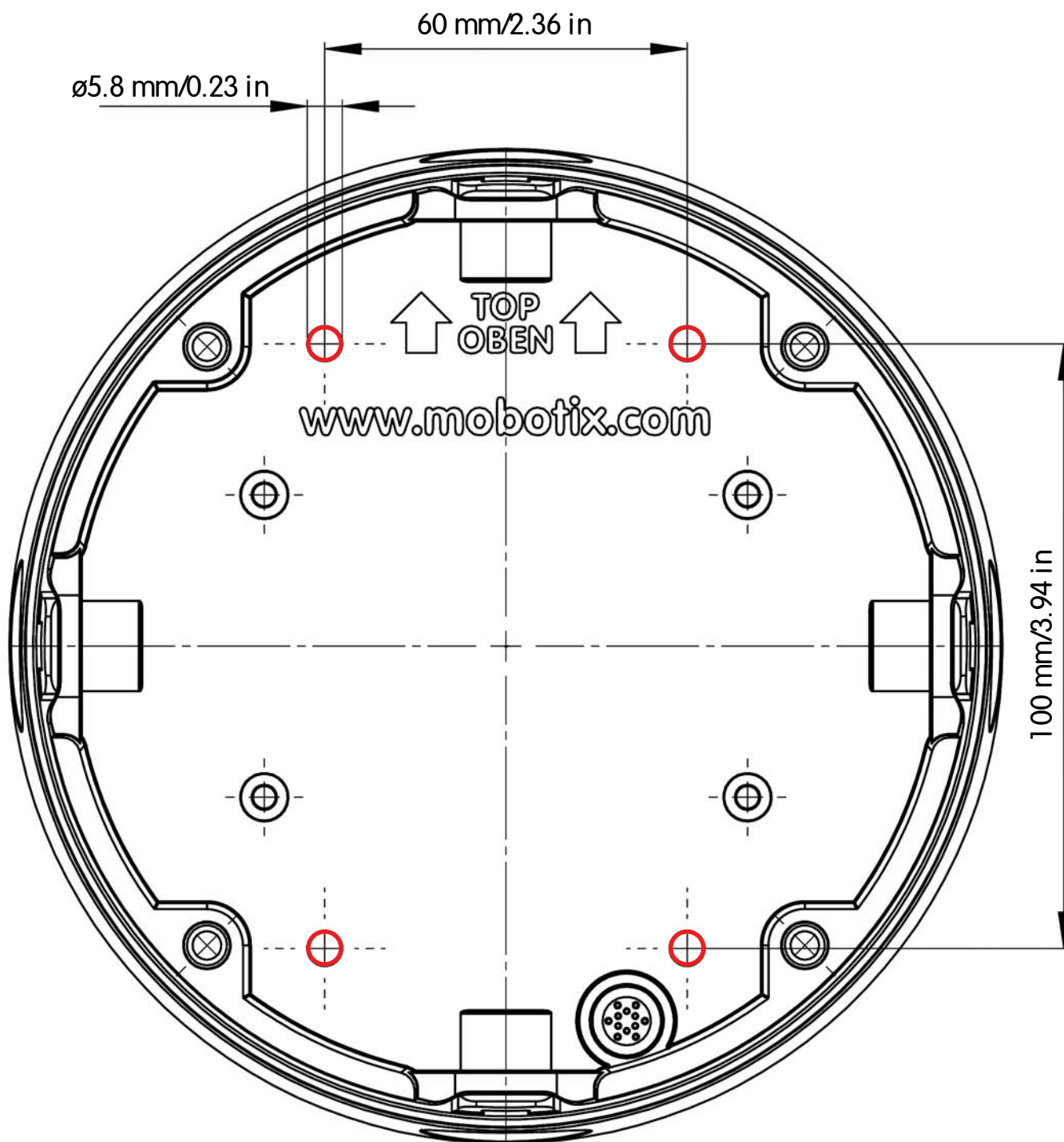
Security-Vision-Systems



D22M On-Wall Set: Drilling Template

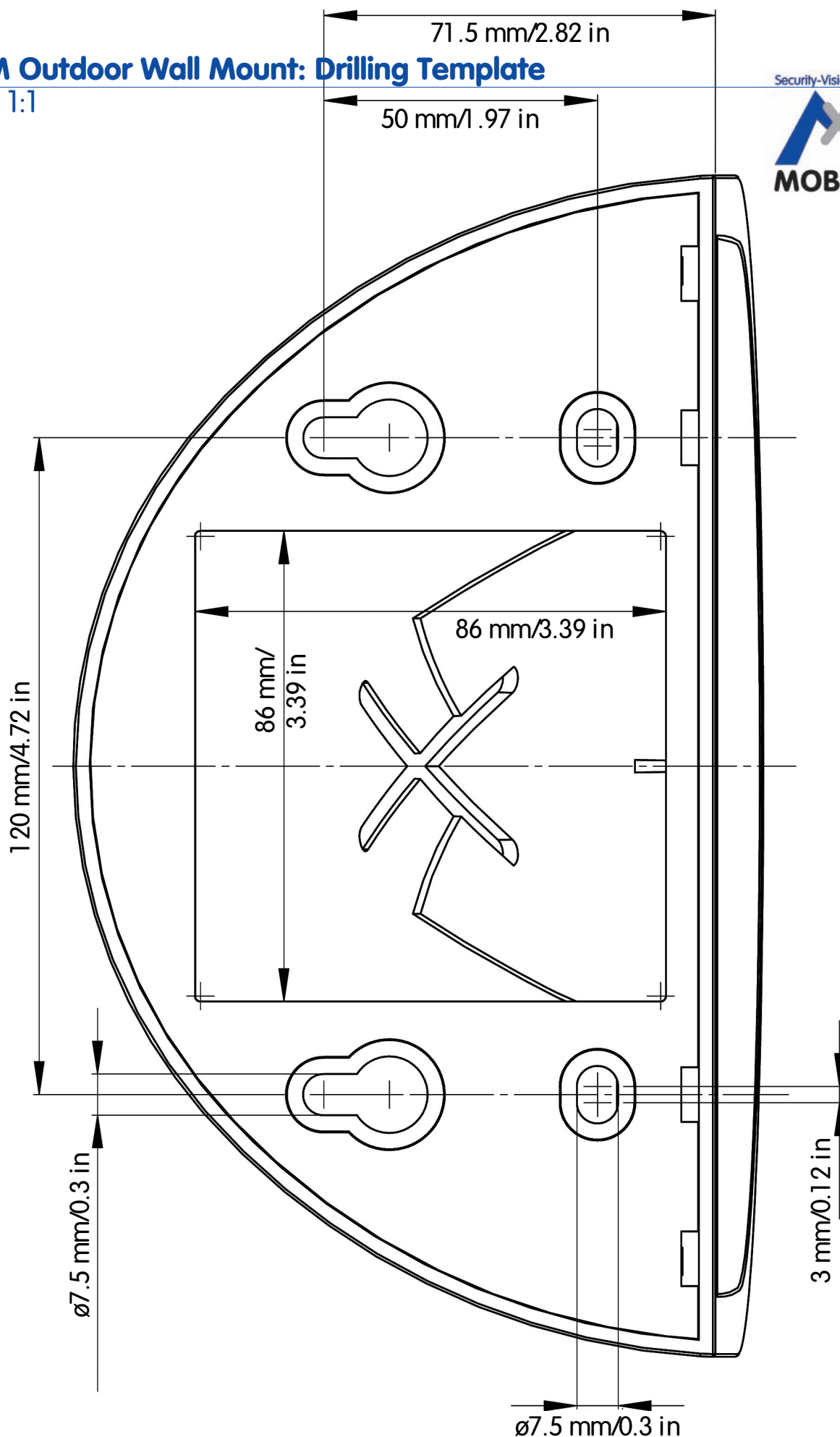
Scale 1:1

Security-Vision-Systems



Scale 1:1

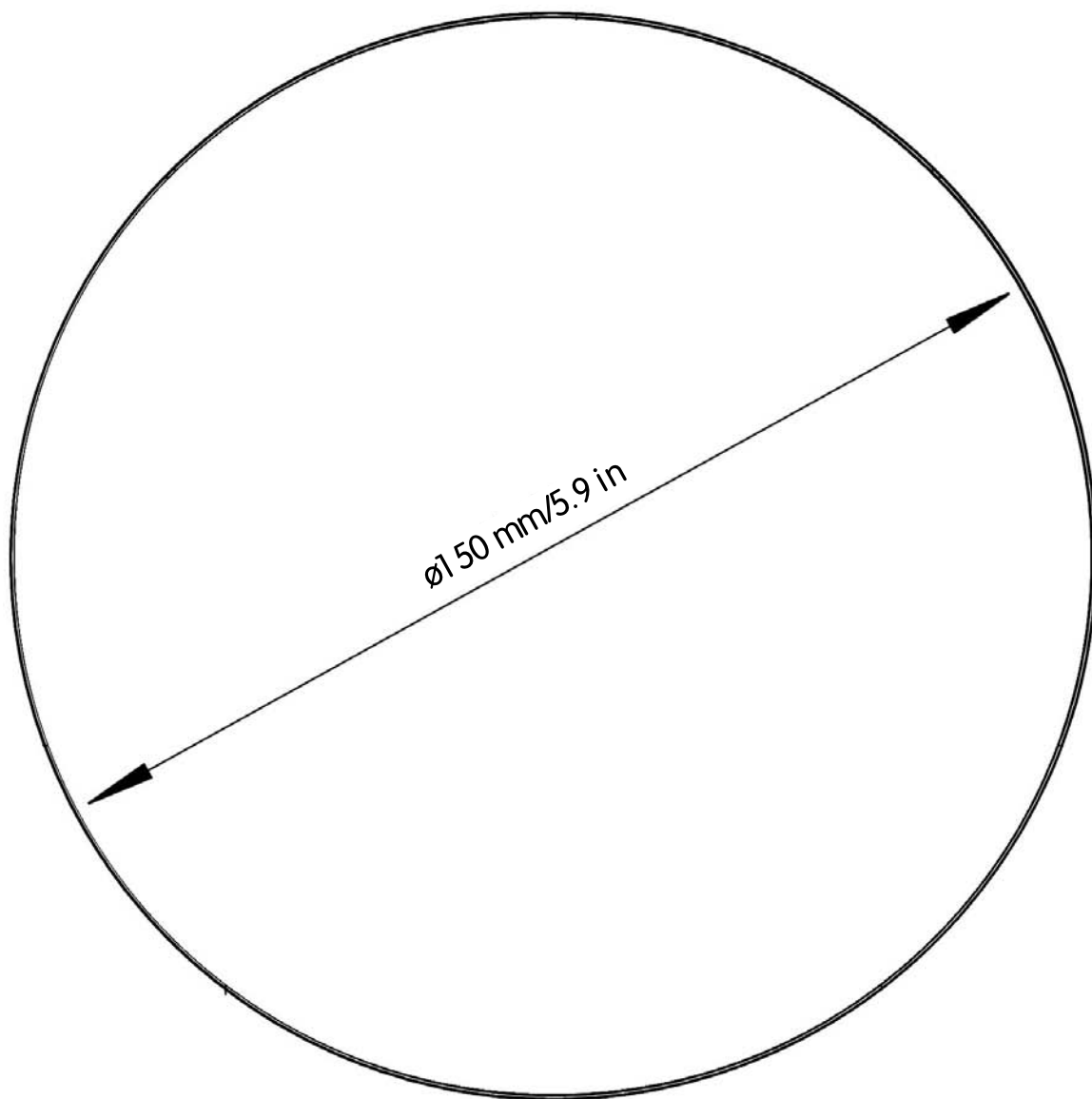
Security-Vision-Systems



D22M In-Ceiling Set: Drilling Template

Scale 1:1

Security-Vision-Systems



3 Megapixels

2048 x 1536
8x software zoom

30 Frames/s

VGA (640 x 480)
12 fps Mega

-22°F to +140°F

Weatherproof

-30°C to +60°C, IP65
no heating necessary

IEEE 802.3af

PoE

network power
even in winter

microphone & speaker

Audio

bi-directional via IP
variable frame rates

Video SIP Client

IP Telephony

alarm notify,
camera remote control

Video motion

multiple windows
precision pixel-based

lip-synchronized audio

Recording

event ring buffer
30 cams each 30 fps

Live viewing

30 cams at 30 fps
all on one screen

Backlight

safe using CMOS
without mechanical iris

Wall mount

with cable cover
for RJ45 wall outlet

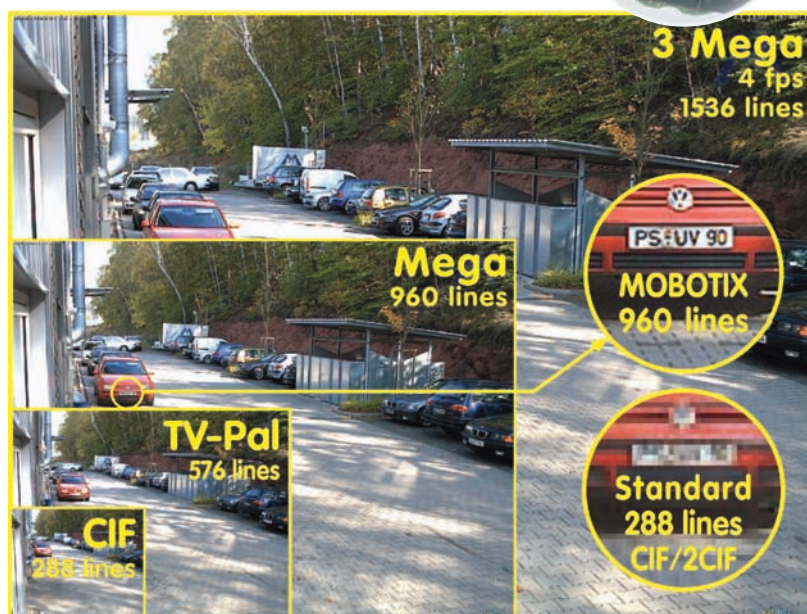
Robust

no moving parts
fiber glass housing

D22M

Camera Manual

Part 1



Complete integration for web and security

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